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Appendices

HIGHWAY 404 EXTENSION

Davis Drive (York Regional Rd. 31)
to Highway 12

Route Planning Study and
Environmental Assessment

Central Region
W.P. 299-86-00

Prepared by:

COLE, SHERMAN & ASSOCIATES LTD.

December, 1997

COLE SHERMAN

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Ministry of
Transportation

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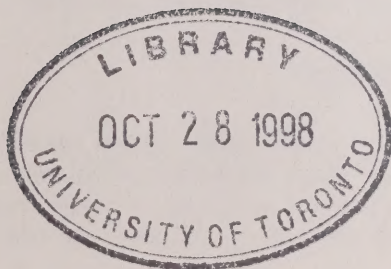
Appendices

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Environmental Assessment**

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APPENDICES

1. Transportation/Engineering
 - 1.A Demand Modeling
 - 1.B Rationale for Preliminary Interchange, Grade Separation and Road Closing Assumptions
 - 1.C Unit Costs
2. Noise Impact Report
3. Natural Environment
 - 3.A Results of Additional Fisheries Field Work
 - 3.B Impact Areas of Preferred Route
4. Heritage Impact Report
5. Summary of Public Information Sessions and Workshops
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 - 6.E Twinning Highway 48 Assessment
7. Select Correspondence
 - 7.A External Team
 - 7.B Municipal Team
8. Agricultural Impacts of Preferred Route
9. Pre-Submission Consultation

RELATED STUDIES

The following studies were prepared over the course of this project to provide specific information which guided the study process and/or served as inputs to decision-making. Copies of these reports were made available to the public and agencies during the study, and are available for review, upon request, at MTO and libraries in the study area.

Environmental Assessment Proposal
Transportation and Utilities Technical Report
Natural Environment Technical Report
Social-Economic Environment Technical Report
Cultural Environment Technical Report

APPENDICES

1. Theoretical Framework
1.A. Research Objectives
1.B. Research Questions
1.C. Research Hypotheses

2. Research Methodology
2.A. Research Design
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5. Discussion
5.A. Summary
5.B. Implications

6. Conclusion
6.A. Summary
6.B. Implications

REFERENCES

The following references were consulted in the preparation of this report. The list is not intended to be exhaustive, but rather to provide a guide to the sources of information used in the study. The references are listed in alphabetical order of the author's name.

- Anderson, J. R. (1980). The role of the environment in the development of language. *Journal of Child Psychology and Psychiatry*, 21(1), 1-10.
Baker, L. (1985). The role of the environment in the development of language. *Journal of Child Psychology and Psychiatry*, 26(1), 1-10.
Baker, L. (1985). The role of the environment in the development of language. *Journal of Child Psychology and Psychiatry*, 26(1), 1-10.

APPENDIX 1 TRANSPORTATION / ENGINEERING

1.A Demand Modeling

1.B Rationale for Preliminary Interchange, Grade Separation and Road Closing Assumptions

1.C Unit Costs

APPENDIX I: TRANSPORTATION

- 1.1. Domestic Shipping
- 1.2. Highway and Air Transportation
- 1.3. Other Transportation Modes
- 1.4. Transportation
- 1.5. Fuel Costs

1.1 Introduction

The purpose of this appendix is to provide a brief overview of the demand modeling process. The first section discusses the importance of demand modeling in the context of transportation planning. The second section describes the basic steps involved in developing a demand model. The third section discusses the various types of demand models that are commonly used in transportation planning.

1.2 The Demand Modeling Process

1.2.1 Data Collection

The first step in the demand modeling process is data collection. This involves gathering information about the travel behavior of the population in the study area. Data can be collected through a variety of methods, including household travel surveys, origin-destination surveys, and traffic counts.

Once data has been collected, it must be processed and analyzed to identify the key factors that influence travel behavior. This may involve statistical analysis, such as regression analysis, to estimate the relationship between travel behavior and various socio-economic and demographic factors.

APPENDIX 1.A DEMAND MODELING

The demand modeling process is a complex one, and it is important to understand the various steps involved. The first step is data collection, which involves gathering information about the travel behavior of the population in the study area. This can be done through a variety of methods, including household travel surveys, origin-destination surveys, and traffic counts. Once data has been collected, it must be processed and analyzed to identify the key factors that influence travel behavior. This may involve statistical analysis, such as regression analysis, to estimate the relationship between travel behavior and various socio-economic and demographic factors.

The next step in the demand modeling process is model development. This involves selecting a model that best represents the travel behavior of the population in the study area. There are a number of different models that can be used, including gravity models, logit models, and multinomial logit models. The choice of model will depend on the specific characteristics of the study area and the data available.

1.2.2 Model Development

Once a model has been selected, it must be calibrated and validated. Calibration involves estimating the parameters of the model using the data collected in the first step. Validation involves comparing the model's predictions with actual travel behavior data to assess the model's accuracy. If the model's predictions are not accurate, it may be necessary to revise the model or the data.

The final step in the demand modeling process is model application. This involves using the calibrated and validated model to predict travel behavior for different scenarios. This can be used to evaluate the impact of different transportation planning alternatives, such as new roads, transit systems, or land use changes. The results of the model application can be used to inform decision-making and to develop transportation plans that better meet the needs of the community.



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A. DEMAND FORECASTING

A.1 General Description

Planning of transportation networks involves an assessment of future supply and demand of transportation systems. This assessment is conducted with the assistance of computer models which quantify the demand for travel and simulate route choice on road and transit networks.

A.2 Project Specific Description

A.2.1 EMME/2

EMME/2 was the transportation model used for this project. Initially developed in the early 1980's, this model offers a complete and comprehensive set of tools for demand modeling and analysis of medium to large-scale road networks, such as that found in this study.

EMME/2 is widely accepted as one of the most popular transportation models, and is currently used by many provincial, regional and municipal transportation ministries and agencies, including the Ontario Ministry of Transportation and the Regions of York and Durham.

Inputs to the transportation model are divided into two parts: "supply side" and "demand side". The supply side inputs describe the transportation infrastructure, including the base road network and transit services available, while the demand-side inputs describe the socio-economic characteristics of an area or region. The model essentially determines the shortest path between origin and destination for each trip. Equilibration procedures determine the equilibrium between the "demand side" and the performance of the "supply side" and predict the flows of vehicles on the transportation facilities.

In 1993, the Office of the Greater Toronto Area (OGTA) undertook a long-range planning exercise to establish population and employment patterns for south-central Ontario. As a result of this exercise, population and employment projections and transportation networks were established to a planning horizon year of 2021 in a format compatible with EMME/2.

A.2.2 Supply Inputs

Base road network inputs include such information as number of lanes and volume/delay penalties. Both MTO and York Region have developed EMME/2 base road networks for south-central Ontario, including the study area for this project. The York Region base road network was adopted for this study because it provided more accurate information on individual road links and delay penalties in the area north of the GTA, where the Highway 404 Extension study area is situated.

The base road network considered two time frames: existing (1991) and future (2011). The future base road network incorporates improvements to the road network identified by MTO and York and Durham Regions which will be constructed prior to 2011. The York Region base road network also includes the extension of Highway 404 north to Queensville Sideroad, even though the construction of this extension is the subject of this environmental assessment. For the purposes of the modeling exercise conducted for this study, this extension of Highway 404 was included in the future base road network; removing this

extension would have significantly reduced the effectiveness of the model's output in the analysis of impacts and benefits to the study area road network.

In addition, the following improvements (all by York Region) were incorporated into the future base road network:

- improvements to Herald Road/Green Lane north of Newmarket;
- widening of Leslie Street from two to four lanes between Mulock Drive and Mount Albert Sideroad;
- widening of Woodbine Avenue from two to four lanes between Queensville Sideroad and Old Homestead Road (York Road 79); and
- Paving and upgrading Kennedy Road between Davis Drive and Base Line Road (York Road 8A).

The Ministry of Transportation is currently studying the location of a roadway facility linking Highway 400 and Highway 404. Referred to as the Bradford Bypass, this controlled access facility is proposed to connect to Highway 404 north of Queensville (for details, refer to the Bradford Bypass Environmental Assessment Study). This facility was not included in the future road network for this study because approval for this project has not yet been granted. However, output from modeling scenarios with and without a Bradford Bypass indicated that the Bypass affects travel patterns, but has no significant effect on traffic volumes in the Highway 404 study area road network. The Bradford Bypass EA documents the modeling exercises which include the Highway 404 Extension and the Bradford Bypass in the future base road network.

The existing (1991) and future (2011) base road networks within the project study area used in the modeling for this project are shown in Exhibit A.1.

Transit services available throughout south-central Ontario were defined using York Region's EMME/2 inputs, which are consistent with transit services inputs in the MTO EMME/2 model.

A.2.3 Demand Inputs

The socio-economic inputs reflect travel demand within and between sub-areas (zones) served by the base road network. Travel demand is related to population and employment levels within each zone. Over 900 zones within south-central Ontario were used in the modeling exercises; aggregated for brevity, thirty-seven representative zones are shown on Exhibit A.2. Population and employment levels for years 1991, 2011 and 2021 within each of the thirty-seven zones are shown in Exhibit A.3.

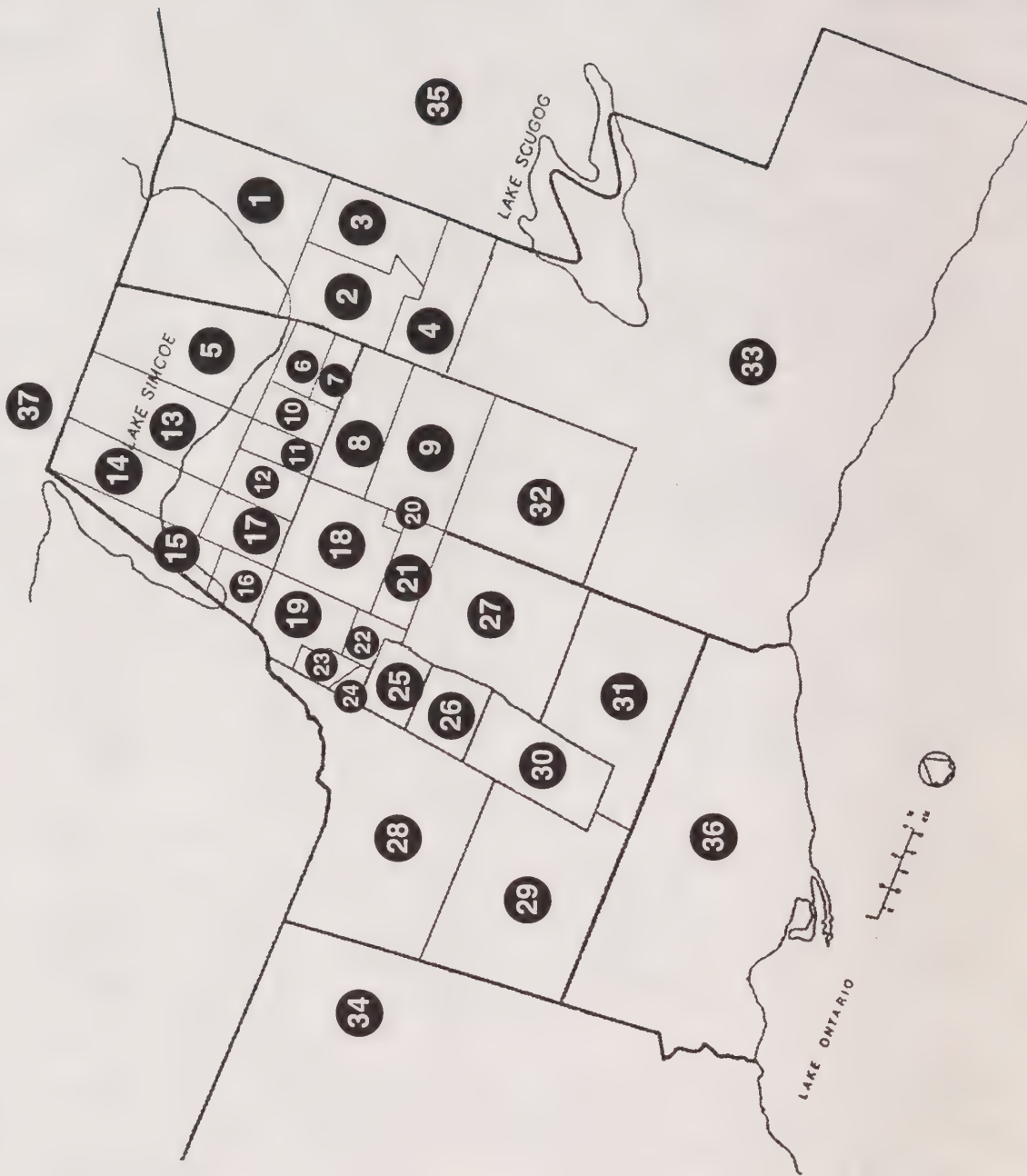
The population and employment levels indicate that the road network will serve a high proportion of commuter trips, typically destined to employment areas south of the study area in the morning, and returning to the study area in the afternoon.

The number of trips within and between zones are provided in a matrix form, known as a trip table. Trip tables can reflect trips made during a specific time period (e.g. a morning peak hour) or over an extended period of time (e.g. any weekday). The trip tables can also reflect trips made in any (future) year for which population and employment projections for each zone are available. Given the high proportion of commuter trips, trip tables reflecting the morning peak hour period were analysed. Conditions on the road network during this period could be expected to be repeated in the afternoon peak period.

Existing (1991), future (2011) and ultimate (2021) trip tables were developed by MTO and York Region. The MTO's trip tables for weekday (commuter) traffic were adapted for this study because they:

ONES

- 1 Beaverton
- 2 N. Brock
- 3 Cannington
- 4 S. Brock
- 5 Virginia
- 6 Pefferlaw
- 7 Udora
- 8 Zephyr
- 9 Sandford
- 10 Cedarbrae
- 11 Baldwin
- 12 Elm Grove
- 13 Sutton
- 14 Sutton West
- 15 Roches Pt.
- 16 Keswick
- 17 Belhaven
- 18 N. E. Gwillimbury
- 19 Queensville
- 20 Mt. Albert
- 21 S. E. Gwillimbury
- 22 Sharon
- 23 Holland Landing
- 24 W.E. Gwillimbury
- 25 Newmarket
- 26 Aurora
- 27 Whitchurch-Stouffville
- 28 King
- 29 Vaughan
- 30 Richmond Hill
- 31 Markham
- 32 Uxbridge
- 33 S. Durham
- 34 S. W. Ontario
- 35 E. Ontario
- 36 Metro Toronto
- 37 N. Ontario



Population and Employment Forecasts

Zone	1991		2011		2021	
	Population	Employment	Population	Employment	Population	Employment
1 Beaverton	4,650	1,500	7,700	2,300	8,700	2,800
2 N. Brock	2,000	700	4,250	900	4,800	1,050
3 Cannington	3,100	1,300	4,100	1,850	4,950	2,200
4 S. Brock	1,350	250	1,350	250	1,500	250
5 Virginia	2,050	250	2,700	250	3,150	250
6 Pefferlaw	1,850	250	3,400	250	4,450	250
7 Udora	450	50	500	50	550	50
8 Zephyr	950	150	1,850	200	2,400	200
9 Sandford	2,750	300	4,300	350	5,000	350
10 Cedarbrae	400	100	550	100	650	100
11 Baldwin	450	250	550	300	600	350
12 Elm Grove	900	400	1,050	350	1,250	300
13 Sutton	5,550	1,700	7,150	3,150	8,750	3,800
14 Sutton West	1,450	350	2,200	300	2,700	250
15 Roches Pt.	1,550	400	8,200	1,700	12,400	2,300
16 Keswick	14,700	2,250	22,600	4,750	29,100	5,950
17 Belhaven	600	250	1,100	1,750	1,350	2,350
18 N. E. Gwillimbury	2,150	400	2,700	400	3,050	450
19 Queensville	1,900	300	1,950	700	2,200	950
20 Mt. Albert	1,700	300	3,650	700	5,250	850
21 S. E. Gwillimbury	1,050	600	1,700	1,400	2,100	1,650
22 Sharon	2,750	300	5,850	2,100	7,700	3,100
23 Holland Landing	8,400	950	13,300	2,100	18,300	2,750
24 W. E. Gwillimbury	400	200	950	1,550	1,350	2,300
25 Newmarket	45,500	23,800	70,000	37,000	75,000	40,000
26 Aurora	29,450	11,650	53,000	24,000	65,000	28,000
27 Whitchurch-Stouffville	18,350	5,800	28,000	14,000	30,000	15,000
28 King	18,100	5,550	23,000	8,000	25,000	9,000
29 Vaughan	111,350	65,100	240,000	145,000	290,050	170,000
30 Richmond Hill	80,150	34,550	180,000	95,000	200,000	110,000
31 Markham	153,800	91,900	260,000	155,000	310,000	180,000
32 Uxbridge	10,400	3,750	19,000	5,450	23,400	6,250
33 S. Durham	383,900	163,450	757,450	298,700	899,250	356,900
34 S. W. Ontario	2,952,350	1,355,600	3,861,750	1,855,750	2,465,000	1,266,250
35 E. Ontario	275,950	98,450	315,300	122,250	-	-
36 Metro Toronto	2,275,700	1,452,400	2,540,000	1,680,000	2,700,000	1,800,000
37 N. Ontario	48,000	20,250	70,250	31,850	-	-
Sum	6,466,100	3,345,750	8,521,400	4,499,750	7,214,950	4,016,250

Source: MTO-Demand Management & Forecasting Office

POPULATION AND EMPLOYMENT FORECASTS

- incorporated the latest population and employment forecasts for the GTA (summer 1993);
- reflected the MTO's latest modeling practices and assumptions regarding trip generation, distribution and modal splits; and,
- provide consistency with MTO's recent demand forecasting exercises for Highway 407.

MTO trip tables were augmented by incorporating refinements included in York Region's trip tables; these refinements generally pertained to zones situated outside the GTA. Recent trip tables for weekend (recreational) traffic were not available from MTO. Recreational trip tables were developed using older (1989) trip matrices updated to reflect the latest population growth projections.

The weekday and weekend trip tables are shown in Exhibit A.4.

A.2.4 Significance/Sensitivity/Limitations

The York Region and MTO base road networks were originally developed to address transportation planning needs in the Greater Toronto Area. As such, much of the base road network and zone detail was centred on Metropolitan Toronto and the immediate surrounding areas, including York and Durham Regions. Outside York and Durham Regions, population and employment data were compiled in much larger zones. These large zones are situated on the fringes of the base road network, with only a limited number of road links serving the zone. As a result, large trip volumes are "point loaded" onto the road network which are dispersed by the model as the trips move through the network.

Large zones introduce limitations on accuracy of trip volumes on the fringes of the model base road network. The extreme north and east study area limits for the Highway 404 Extension are situated on the fringe of the base road network; this limitation was, therefore, considered in assessing road links in these areas.

The output obtained from EMME/2 is an approximation of traffic volumes on the road network in a given year. The longer the forecast period, the greater the uncertainty surrounding projections used as inputs to the model. The trip tables used in this model reflect the most recent ambitions and policies incorporated in Official Plans; the size and location of development may differ from these plans.

The model output must be assessed in a similar context; while useful to indicate traffic volumes or travel patterns on a screenline or corridor basis, assessing the model output on an individual road segment basis would imply a level of accuracy which is beyond the capabilities of the model. Therefore, in certain instances, professional judgement was used to interpret the model output and reduce the systematic limitations of the model.

The MTO trip tables are based on the Transportation Tomorrow Survey conducted in 1991, which surveyed the travel patterns of households within south-central Ontario. As a result, traffic volumes provided by the model do not include truck and bus volumes. To compensate for this omission, the assumption was made, based on the York Region Cordon Count program (1993), that such traffic would increase volumes across the entire base road network by 10%. In reality, the percentage of bus and truck traffic will vary among the various corridors and facilities.

1991 AM Peak Hour Vehicle Trips

1991 AND 2011
WEEKDAY TRIP TABLES

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12

Route Planning Study and Environmental Assessment



Ministry of Transportation

A.4A

Zone		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Sum		
1	Bauertown	39	4	16	0	0	0	0	0	0	0	0	0	15	3	2	10	1	1	1	0	1	0	1	0	1	0	8	3	4	1	3	3	6	13	58	30	14	48	1	285
2	N. Brock	0	1	4	0	0	0	0	0	0	4	0	0	8	2	1	3	5	0	1	0	1	1	0	1	0	9	3	4	1	3	3	3	7	17	8	26	5	0	177	
3	Cunnington	0	0	15	0	0	19	0	0	12	0	0	6	1	1	3	3	0	0	0	0	0	0	0	0	5	2	2	0	2	4	10	45	15	42	31	0	228			
4	S. Brock	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	1	2	5	3	22	90	13	0	160	
5	Virginia	0	0	0	0	0	0	0	0	0	0	0	0	13	3	2	8	1	1	0	1	1	0	1	0	1	2	2	3	1	3	18	5	3	24	6	61	0	160		
6	Piffardus	0	13	0	0	28	0	0	0	0	0	0	0	10	2	1	5	0	1	1	0	1	0	0	0	0	5	1	2	0	2	2	17	7	3	6	0	160			
7	Udora	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	1	1	4	3	9	13	1	8	0	4	
8	Zephyr	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	4	0	1	1	0	1	0	1	0	0	8	3	3	1	2	3	12	11	2	10	0	110			
9	Sandford	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	0	2	1	1	2	3	1	1	1	0	23	8	10	2	7	9	38	70	11	21	0	70		
10	Cedarhurst	0	0	0	0	0	0	0	0	0	0	0	0	14	1	0	2	0	0	0	0	0	0	0	0	0	2	1	0	1	1	1	4	1	0	5	0	7	0	3	
11	Baldwin	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	2	0	1	0	0	0	1	0	0	0	0	3	1	1	0	1	1	5	1	1	15	0	10	0	50
12	Elm Grove	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	1	4	0	1	0	1	0	1	0	0	0	14	3	2	1	6	9	11	1	1	12	0	23	0	92
13	Sutton	0	0	0	0	0	0	0	0	0	0	0	0	0	8	4	6	6	2	4	2	30	3	1	2	0	14	3	2	1	6	9	14	10	5	11	0	76	0	38	
14	Sutton West	0	0	0	0	0	0	0	0	0	0	0	0	13	0	5	17	1	1	1	1	1	1	1	1	0	43	9	7	2	6	9	14	10	5	11	0	76	0	38	
15	Roches Pt.	0	0	0	0	0	0	0	0	0	0	0	0	0	8	4	0	2	0	1	1	1	1	1	1	0	16	7	2	1	5	18	6	2	2	16	0	28	0	14	
16	Keswick	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	8	2	2	4	5	6	1	1	2	0	23	0	14	
17	Belhaven	0	0	0	0	0	0	0	0	0	0	0	0	13	25	22	104	28	11	13	4	14	22	17	2	282	79	24	18	81	74	87	9	15	56	0	230	0	133	0	6
18	N.E. Guillembury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	0	7	3	1	1	2	2	8	0	0	1	0	10	0	6	
19	Quessville	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	20	0	0	0	1	2	4	6	3	1	47	16	8	4	11	14	19	4	11	1	0	49	0	23	
20	Mt. Allert	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	18	0	1	0	1	2	6	24	0	47	13	4	3	9	11	13	1	1	8	0	46	0	21		
21	S.E. Guillembury	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	1	4	1	2	6	1	0	69	11	8	3	7	9	16	6	10	4	36	0	19		
22	Sharon	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	1	1	9	1	0	36	9	6	7	7	9	13	3	3	6	2	39	0	14		
23	Holland Landing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	9	2	1	4	7	4	1	113	22	7	5	15	29	23	3	2	11	0	62	0	33		
24	W.E. Guillembury	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3	12	1	4	5	2	9	5	35	3	272	101	14	33	64	50	45	5	12	130	0	191	0	100		
25	Newmarket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	3	0	1	2	2	1	0	0	4	0	46	0	46		
26	Aurora	0	0	0	0	0	0	0	0	0	0	0	1	5	3	3	28	3	9	41	6	24	23	62	6	1546	351	101	248	288	370	323	25	34	216	0	980	0	4897		
27	Witchurch-Stouffville	0	0	0	0	0	0	0	0	0	0	0	1	1	2	8	1	4	4	3	2	9	3	70	3	416	626	92	169	308	303	224	10	21	147	0	825	5	3265		
28	King	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	2	1	1	3	8	2	3	1	120	96	233	32	78	121	377	37	57	66	0	539	0	178		
29	Vaughan	2	0	2	0	0	0	0	0	0	0	0	0	1	1	2	2	0	2	1	0	4	1	3	1	129	120	15	189	367	115	72	3	15	410	0	783	0	224		
30	Richmond Hill	0	0	0	0	0	0	0	0	0	0	0	1	2	3	5	0	4	2	1	0	4	2	5	1	185	212	71	98	1396	1677	29	143	469	2	1782	0	1570			
31	Markham	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	6	0	4	4	2	3	10	8	2	172	168	168	44	1091	1261	5157	27	348	573	4	1782	0	931		
32	Uxbridge	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	6	0	4	3	1	3	6	1	2	0	81	28	44	7	26	44	137	180	137	33	5	227	0	100	
33	S. Durham	0	29	10	1	0	0	0	0	0	0	0	0	3	1	1	3	0	3	1	2	5	1	1	1	83	42	108	15	162	236	945	251	2403	983	344	9534	7	3715		
34	S. W. Ontario	26	21	45	18	6	15	11	8	10	26	13	6	19	5	14	0	15	1	0	6	1	50	14	518	998	74	286	3193	503	745	17	156	263322	112	34787	869	30532	7	3715	
35	E. Ontario	59	3	64	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	39	51	82	11	155	331	24792	850	32	2788	
36	Metrol Toronto	7	2	9	2	0	1	0	0	0	0	2	3	415	305	227	229	8756	2470	8942	45	2417	17560	81	14949	32	19103	5566	28	96	24	28140	2521	21830	5450	626980	7	3715			
37	N. Ontario	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	2	0	23	0	96	4502	5566	28	96	4502	5566
	Sum	134	23	166	21	39	35	11	12	43	10	26	22	300	101	81	407	49	104	86	74	156	99	332	41	4807	2700	1276	1497	18912	8156	19503	37	29792	287140	2521	21830	5450	626980		

2011 AM Peak Hour Vehicle Trips

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Sum			
1 Beaverton	435	9	18	1	0	8	3	4	9	2	5	4	20	8	19	58	8	12	7	10	13	1	20	32	7	6	6	4	0	0	14	0	38	51	17	12	34	1	89		
2 N. Brock	18	18	1	0	0	0	0	9	16	0	0	0	1	0	1	3	0	1	0	1	1	1	2	0	7	2	0	6	4	0	0	14	0	38	51	17	12	34	1	47	
3 Canimook	9	20	18	1	0	0	0	10	20	0	0	0	1	0	1	3	0	1	0	1	1	2	0	8	7	5	0	59	12	59	86	31	4	18	153	0	53				
4 S. Brock	4	9	7	0	0	0	4	2	8	0	0	0	0	0	0	1	0	0	0	0	0	1	0	3	2	0	24	5	25	35	13	2	35	67	0	255					
5 Virginia	1	0	0	4	4	2	0	4	1	2	0	2	9	4	9	27	4	5	3	5	6	9	15	3	63	25	3	3	14	23	12	1	1	0	36	0	27				
6 Pefferlaw	2	1	1	0	7	7	3	0	1	2	4	3	16	7	16	49	7	10	6	9	11	17	27	6	35	46	6	5	26	41	22	3	2	3	0	65	0	49			
7 Ufford	0	0	0	1	0	0	0	1	3	1	1	1	3	1	3	9	1	2	1	2	2	3	5	1	1	1	1	1	5	7	4	1	0	0	11	0	8				
8 Zephyr	5	12	10	0	0	0	0	6	11	0	0	0	1	1	3	1	2	0	0	0	1	1	0	5	4	3	0	33	7	34	49	19	2	0	0	88	0	29			
9 Sandford	11	26	22	1	1	1	1	0	12	24	0	0	1	1	1	4	1	1	1	1	1	2	3	4	1	10	8	6	0	70	15	73	103	40	5	0	180	0	62		
10 Cedarbrae	0	0	0	1	1	0	0	1	0	0	0	1	1	3	1	8	1	2	1	1	1	2	3	1	1	4	7	4	1	0	7	4	1	0	1	0	8				
11 Baldwin	0	0	0	1	1	0	0	1	0	0	1	2	1	0	2	1	6	1	1	1	1	1	2	3	1	8	6	1	1	3	5	3	0	0	1	0	6				
12 Elm Grove	1	0	0	2	3	1	0	0	1	0	1	2	1	6	3	19	3	4	2	3	4	6	10	2	8	2	4	17	2	2	10	16	9	1	1	0	6				
13 Sutton	4	2	1	0	12	13	5	4	1	1	3	8	6	32	13	29	92	13	19	12	16	20	32	51	11	128	91	11	10	51	87	43	7	3	4	0	24				
14 Sutton West	1	0	0	4	4	2	0	0	1	0	1	3	2	10	4	10	29	4	6	4	5	6	10	16	3	40	29	3	3	16	26	14	2	1	0	139	0	97			
15 Roches Pl.	6	2	2	0	18	20	7	1	2	5	12	9	45	18	41	126	18	6	4	5	6	10	16	14	164	118	15	13	68	106	58	9	4	5	0	42	0	308			
16 Keswick	15	6	5	0	46	48	20	3	5	13	30	23	12	47	106	321	49	66	41	57	72	113	68	14	38	439	319	38	36	181	309	155	23	11	21	0	486	0	1274		
17 Belhaven	1	0	0	0	3	3	1	0	0	1	2	1	7	3	7	20	3	4	2	4	4	7	11	2	26	19	2	4	20	32	18	3	1	1	0	26	0	340			
18 N. E. Guilfimbury	2	1	1	0	5	6	2	0	1	1	4	3	14	5	13	39	6	8	5	6	8	14	21	4	50	36	5	4	15	25	13	2	1	3	0	49	0	394			
19 Queensville	1	0	0	0	4	4	2	0	0	1	3	2	10	4	9	29	4	6	4	5	6	10	16	3	38	27	3	6	29	45	25	4	2	2	0	66	0	547			
20 Mt. Albert	2	1	1	0	7	8	3	0	1	2	5	4	19	8	18	55	8	11	7	10	12	19	30	6	71	51	2	7	10	16	9	1	1	1	1	24	0	197			
21 S. E. Guilfimbury	1	0	0	0	3	3	1	0	1	1	2	1	7	3	7	20	12	3	4	3	4	7	11	2	26	18	2	2	10	16	9	1	1	1	1	24	0	174			
22 Sharon	4	1	1	0	11	11	4	1	1	3	7	5	27	11	26	78	12	15	10	14	17	27	41	9	103	74	9	8	42	67	36	6	3	6	0	109	0	801			
23 Holland Landing	8	3	3	0	24	25	10	1	3	7	16	12	61	25	58	175	26	36	22	31	38	61	84	20	224	143	21	18	92	143	79	12	7	55	0	1782	0	1782			
24 W. E. Guilfimbury	0	0	0	0	0	0	1	1	0	0	0	1	1	3	1	3	9	1	2	1	2	2	3	5	1	12	6	1	1	5	8	4	1	0	2	0	13	0	95		
25 Neumark	0	2	2	0	12	13	5	1	3	8	6	30	12	29	87	15	19	12	16	22	33	53	12	2091	1386	206	303	390	1656	389	10	27	301	0	1737	17	762	0	460		
26 Aurora	0	2	2	4	12	13	5	1	3	8	6	30	12	29	87	15	19	12	16	22	33	53	12	2091	1386	206	303	390	1656	389	10	27	301	0	1737	17	762	0	460		
27 Whitebrook-Soo/ville	0	4	3	0	3	3	1	2	4	1	2	1	7	3	7	20	3	4	2	3	4	7	11	2	13	189	367	5	48	74	1834	17	104	183	0	746	0	460			
28 King	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	2	6	1	1	2	3	1	2	3	1	172	73	6	591	490	211	107	0	312	0	3420	0	3420			
29 Vaughan	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
30 Richmond Hill	0	0	15	13	1	2	2	1	7	15	1	1	5	2	5	16	3	3	2	3	6	9	2	403	531	177	3680	586	3117	64	1243	1124	1	6692	0	2325	0	2325			
31 Markham	0	16	14	7	2	2	1	8	17	1	1	1	5	2	6	17	2	3	2	3	5	6	9	2	447	190	1862	38	2034	2027	8672	75	2166	1869	3	13635	1	33154	0	33154	
32 Ustridge	45	105	89	2	2	2	1	51	98	1	2	1	1	2	4	6	2	6	1	2	3	2	3	25	0	275	597	336	432	163	139	4	805	0	2623	0	2623				
33 S. Durham	3	66	56	51	7	9	4	34	69	2	5	4	19	8	18	53	9	12	7	12	15	20	34	7	438	254	47	6	479	113	6382	313	2569	2628	337	20434	5	58209	0	58209	
34 S. W. Ontario	15	0	25	6	0	0	0	0	0	0	16	0	3	0	0	0	0	0	0	0	0	0	0	54	59	818	287	200	327	6382	1220	1024	8	530	341307	93	54173	0	54173		
35 E. Ontario	87	6	104	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	113	108	249	19	3973	684	23499	2829	44	31766	0	31766
Metro Toronto	4	7	6	2	12	13	5	4	7	3	8	6	31	12	29	88	13	18	11	16	20	31	49	10	829	616	285	451	10263	5192	12628	240	259	28512	27	193440	12	255280	0	255280	
N. Ontario	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	60	0	30	1055	18	344	0	63	0	63	
Sum	676	335	411	86	216	230	90	160	318	59	161	107	567	222	519	1601	235	330	198	281	352	552	928	241	9260	6002	3701	2646	35550	21616	38110	66663	383034	24082	18	312656	5313	88967	0	88967	

Source: GTA trips - MTO-Demand Management & Forecasting Office
External trips - York Region Transportation Model

2021 WEEKDAY AND 2011 WEEKEND TRIP TABLES

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Sum
1	Beverton	204	112	109	36	22	26	31	8	9	33	32	40	43	15	22	4	3	3	4	2	2	20	1	14	15	5	4	7	25	103	19	10	29	264	61	425	182
2	N. Brock	112	62	60	19	12	113	17	2	5	18	16	22	22	8	12	2	2	2	2	1	0	11	1	9	8	7	3	4	14	57	19	5	142	156	34	425	
3	Cannington	109	60	58	19	12	110	17	2	5	18	17	2	21	8	12	2	2	2	2	1	0	11	1	8	7	3	4	14	57	19	5	142	156	34	425		
4	S. Brock	36	20	4	6	4	37	6	1	2	5	6	1	7	1	3	4	1	1	1	0	0	4	0	1	2	1	1	4	13	55	10	5	138	152	33	727	
5	Verdria	126	122	41	102	407	62	22	50	65	63	25	147	34	23	109	26	11	11	15	7	0	54	4	122	102	30	24	151	667	111	3	2	46	50	75	32	
6	Pettitville	54	30	29	10	72	340	52	14	31	54	53	9	133	20	41	9	5	4	7	3	0	20	1	28	22	5	9	30	129	22	5	106	164	32	3007		
7	Udara	8	5	4	1	11	52	8	2	5	8	8	1	20	2	6	1	1	1	1	0	0	3	0	4	3	1	1	5	20	3	1	16	25	5	53	14	
8	Zephyr	16	9	9	3	3	12	25	4	15	34	4	4	4	2	3	10	3	14	7	0	26	2	17	15	4	4	5	18	84	17	3	61	100	20	49		
9	Stamford	37	20	9	3	26	56	9	34	79	9	9	6	40	7	11	46	7	24	6	32	15	0	59	4	38	34	10	11	41	191	40	1	139	228	46	363	
10	Bedford	9	2	5	2	2	54	8	34	2	6	8	1	21	2	3	1	1	1	1	0	0	3	0	4	4	1	1	5	21	4	4	17	26	5	56	14	
11	Bedford	4	5	4	1	1	53	8	8	2	8	8	1	21	2	3	6	1	1	1	1	0	0	3	0	4	4	1	5	20	3	1	16	25	5	55	14	
12	Elm Grove	4	4	2	1	33	16	2	5	10	5	8	1	20	2	33	80	20	3	3	1	0	18	1	13	12	5	3	14	51	8	1	5	22	57	8	65	30
13	Southon	48	26	26	9	208	125	19	39	90	20	19	76	273	22	354	78	25	21	34	16	0	93	6	118	93	26	21	109	472	92	11	236	489	36	929	71	
14	Southon West	15	8	8	3	126	33	5	11	26	5	5	20	26	35	89	21	7	6	9	4	0	28	2	43	35	8	7	46	203	35	3	113	178	18	704	16	
15	Rocky Pt.	21	12	11	4	40	35	5	7	16	6	5	34	233	13	518	469	35	6	24	4	0	86	5	177	94	16	63	123	381	72	9	279	479	446	138	80	
16	Keswick	31	18	18	6	141	75	11	23	55	12	12	62	12	83	26	29	47	253	85	24	176	33	15	0	543	32	327	322	340	309	1582	157	12	470	664	3020	
17	Behaven	4	2	2	1	13	16	2	5	11	11	3	2	20	79	21	34	83	21	3	4	29	8	4	40	19	0	18	1	3	15	52	8	1	23	59	31	
18	N. E. Guelphbury	5	3	3	1	34	9	1	11	25	1	1	4	28	4	28	4	29	8	8	4	50	19	0	67	5	25	20	9	6	6	20	108	23	3	2		
19	Greenville	7	4	4	1	9	9	1	4	9	1	1	4	24	2	28	197	4	8	95	14	5	0	274	16	73	54	8	15	55	277	26	4	58	178	48		
20	Mc Albert	7	4	4	1	17	12	2	15	34	2	2	5	38	6	9	36	5	40	10	54	25	0	91	7	33	72	13	8	77	146	32	5	59	106	45	155	50
21	S. E. Guelphbury	3	2	2	1	8	5	1	7	16	1	1	2	18	3	4	17	2	19	5	25	12	0	43	3	15	13	6	3	13	68	15	1	27	49	21	72	
22	Sharon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
23	Howland Landing	39	22	21	7	50	46	7	26	59	7	7	21	106	13	92	606	21	68	273	92	43	3	0	204	146	572	520	60	206	507	265	205	20	421	1514	166	1905
24	N. E. Guelphbury	3	1	1	0	3	3	0	2	4	0	0	1	7	1	6	35	1	5	16	76	12	0	442	11	41	36	4	15	37	178	15	1	30	110	12	137	
25	Newmarket	14	8	7	2	82	23	3	12	27	2	4	11	100	32	71	255	12	19	56	76	12	0	442	11	41	36	4	15	37	178	15	1	30	110	12	137	
26	Aurora	10	5	5	2	48	14	2	8	19	2	2	8	55	18	4	161	1	12	31	16	4	0	29	9	0	0	0	0	0	0	0	0	0	0	0	0	
27	Kitchener-Stouffville	5	3	3	1	20	4	1	3	7	1	1	4	21	7	9	31	4	7	5	9	4	0	43	3	0	0	0	0	0	0	0	0	0	0	0	0	
28	Kitch.	13	7	7	2	19	13	2	5	11	7	2	2	3	28	8	18	7	6	17	12	4	0	29	16	45	59	4	88	65	278	21	4	14	54	8		
29	Georgetown	14	7	7	2	158	13	2	7	15	2	2	2	7	19	32	128	21	39	98	53	25	0	227	18	60	0	0	0	0	0	0	0	0	0	0	0	0
30	Richmond Hill	42	23	22	7	46	17	3	27	62	7	7	20	170	38	126	519	21	39	98	53	25	0	227	18	60	0	0	0	0	0	0	0	0	0	0	0	0
31	Markham	17	9	9	3	62	17	3	12	29	3	3	7	69	22	30	102	7	17	17	12	4	0	146	10	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Uxbridge	15	9	9	3	3	6	1	3	3	2	2	9	3	3	5	13	3	2	2	2	5	1	0	21	1	0	0	0	0	0	0	0	0	0	0	0	0
33	Uxbridge	211	116	113	37	227	59	9	32	72	9	9	14	131	44	65	198	15	24	34	33	15	0	227	17	11	0	0	0	0	0	0	0	0	0	0	0	0
34	S. W. Ontario	420	231	224	75	374	81	48	86	196	51	49	74	465	109	276	929	76	68	177	171	56	0	1532	110	1109	1059	166	520	2172	7745	827	189	177	124352	7524	36340	
35	S. Ontario	323	177	172	57	39	81	12	36	43	13	13	22	72	75	17	60	222	72	28	35	37	0	170	110	689	626	106	164	1176	5464	735	201	7888	16714	643		
36	Metrol Toronto	402	221	215	71	1014	249	38	128	292	40	39	117	484	299	523	1866	107	160	325	217	101	0	2764	199	89	76	3	290	110	307	488	44	1205	16573	435		
37	N. Ontario	146	80	78	26	22	58	9	39	49	9	9	13	44	9	4	151	17	19	29	26	12	0	214	15	457	427	74	816	3361	408	78	2754	14331	230			
Sum		2643	1454	1411	469	3163	2736	415	635	1452	436	424	636	3973	951	2910	656	729	1533	987	437	0	10886	774	4071	3667	617	1822	5944	24740	2964	649	22667	183820	4869	106530	205849	432191

Source: GTA trips - MTO-Demand Management & Forecasting Office
External trips - York Region Transportation Model

The above limitations are characteristic of transportation planning models in general. Traffic volumes provided by EMME/2 are useful as indicators and guidelines of probable future conditions on the road network; the output is not suitable for analyzing impacts to individual road links and professional judgement must be used to interpret the output.

A.3 Calibration

The trip tables and base road network used in the model were validated by using 1991 inputs and comparing the output to actual (observed) traffic volumes. Observed peak hour traffic volumes were not available for certain facilities or road sections; in these instances, volumes were estimated based on AADT's and/or traffic counts on nearby facilities or sections. In addition, observed (1991) traffic volumes on some facilities were lower than those observed in 1989 or 1993. This can be attributed to changes in economic conditions, which impact trip generation rates (the local economy was in recession in the early 1990's).

This comparison was conducted on a screenline basis to reduce the effects of the model's limitations. As shown in Exhibit A.5, the model simulation results were generally within 10 to 15% of actual volumes, a margin of error considered acceptable for such large networks.

A.4 Demand Forecasting

With the model inputs refined sufficiently to reasonably reflect existing conditions, future transportation network scenarios were analysed to forecast travel demand on the road network. In addition to a do-nothing scenario, two scenarios were generated based on the general locations within the study area of the individual route alternatives for the extension of Highway 404. The scenarios do not correspond directly to a single route alternative, but serve to indicate the general traffic volumes and travel demands for the route alternatives located in the general vicinity of the scenario (refer to Exhibit A.6).

The model output was analysed on a screenline basis across significant corridors in the study area. The weekday a.m. peak hour condition was analysed, rather than the weekend (recreational) peak travel period because weekday travel peaks are generally more defined and generate higher peak volumes than weekend peak travel periods.

The 2021 weekday a.m. peak hour screenline volumes in the major corridors for the Do-nothing, North Route and South Route scenarios are shown in Exhibits A.7, A.8 and A.9, respectively. The theoretical capacity of each screenline is also provided for comparison. Details of each screenline are listed in Exhibit A.10.

Facility	Existing 1991		Do Nothing (SCENARIO 9)		North Route (SCENARIO 10)		South Route (SCENARIO 16)	
	No. of Lanes per Dir'n	Capacity Veh/Hour	No. of Lanes per Dir'n	Capacity Veh/Hour	No. of Lanes per Dir'n	Capacity Veh/Hour	No. of Lanes per Dir'n	Capacity Veh/Hour
SCREENLINE 1	North of Newmarket (N/S)							
Leslie Street	1	800	2	1,600	2	1,600	2	1,600
Woodbine Ave.	1	1,200	1	1,200	1	1,200	1	1,200
Kennedy Road	see note A	-	1	900	1	900	1	900
Hwy 404 Extension	N/A	-	3	5,400	3	5,400	3	5,400
TOTAL	2	2,000	7	9,100	7	9,100	7	9,100
SCREENLINE 2	South of Keswick (N/S)							
Leslie Street	1	800	1	900	1	900	1	900
Woodbine Ave.	1	1,200	2	2,400	2	2,400	2	2,400
Kennedy Road	see note A	-	1	900	1	900	1	900
Hwy 48	1	900	1	900	1	900	1	900
Hwy 404 Extension	N/A	-	N/A	-	3	5,400	N/A	-
TOTAL	3	2,900	5	5,100	8	10,500	5	5,100
SCREENLINE 3	West of Pefferlaw (E/W)							
Hwy 48	1	900	1	900	1	900	1	900
Old Homestead Road	see note B	-	-	-	-	-	-	-
Ravenshoe Road	see note C	-	-	-	-	-	-	-
Durham 13	1	800	1	800	1	800	1	800
Hwy 404 Extension	N/A	-	N/A	-	3	5,400	3	5,400
TOTAL	2	1,700	2	1,700	5	7,100	5	7,100
SCREENLINE 4	North of Sunderland (N/S)							
Durham 1	1	800	1	800	1	800	1	800
Durham 23	1	800	1	800	1	800	1	800
Hwy 7/12	1	800	1	800	1	800	1	800
Hwy 404 Extension	N/A	-	N/A	-	N/A	-	2	3,600
TOTAL	3	2,400	3	2,400	3	2,400	5	6,000
SCREENLINE 5	North of Beaverton (N/S)							
Hwy 12/48	1	800	1	800	1	800	1	800
Durham 23	1	800	1	800	1	800	1	800
Hwy 404 Extension	N/A	-	N/A	-	2	3,600	2	3,600
TOTAL	2	1,600	2	1,600	4	5,200	4	5,200

Notes: A - Kennedy Road not considered as part of the existing base road network because of its poor surface conditions. It is included in future road network because York Region is planning to upgrade and improve this facility.
 B - Old Homestead Road is not included in existing or future road network because of its poor surface conditions; no improvements to this facility are planned by York Region.
 C - Ravenshoe Road east of Durham Road 39 is not included in existing or future road network because of its poor surface conditions; no improvements to this facility are planned by York Region.

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12

Route Planning Study and Environmental Assessment

EXHIBIT
A.10

**APPENDIX 1.B RATIONALE FOR PRELIMINARY
INTERCHANGE, GRADE SEPARATION
AND ROAD CLOSING ASSUMPTIONS**

APPENDIX 1.B

1.0 VERIFICATION OF PROPOSED INTERCHANGE LOCATIONS

1.1 VERIFICATION PROCESS

The initial assessment of interchange locations at Regional Roads identified potential interchange locations for the proposed route alternatives for the extension of Highway 404 (refer to Exhibit 1.B.1). To verify that this assessment identified the appropriate interchange locations, a traffic modelling exercise was undertaken, as follows:

1. For the interchange locations identified in the initial assessment, catchment areas were developed based on the trip zones identified by the OGTA (refer to Appendix 1.A.)
2. Freeway-eligible trips from each catchment area were identified and assigned to each interchange. Such trips were assumed to be those destined to central and southern York Region and Metropolitan Toronto as indicated in the year 2021 AM peak hour trip tables provided by MTO and York Region. The PM peak hour was also incorporated by considering the reverse flow of the trips generated in the AM peak hour.
3. Interchange configurations (i.e., the ramp types) were developed based on the trip volumes using each interchange (assuming a parclo-A design) and the following ramp capacities:

RAMP TYPE	DESIGN SPEED (km/h)	CAPACITY (veh/hr)
Inner Loop	50	750
Direct	70	1200
Double Direct	70	1800

4. The forecast traffic volumes for each interchange ramp were verified through modelling techniques for the northern and southern route alternatives (refer to Exhibit 1.B.1).
5. The forecast traffic volumes were compared to the interchange ramp capacities to determine if any interchanges were operating at or near capacity. Such a condition would indicate that additional interchanges may be required.

EXHIBIT 1.B.1
ASSESSMENT OF REGIONAL ROADS FOR POTENTIAL INTERCHANGE LOCATIONS

Regional Roads Crossed	Assessment
Herald Road and York Road 13 (Mt. Albert Sideroad)	<ul style="list-style-type: none"> • Herald Road will be upgraded to York Region standards and designated as a regional road. This road will provide an alternative route around Newmarket to alleviate traffic congestion on Davis Drive. An interchange with Highway 404 is required at Herald Road to alleviate traffic congestion on Davis Drive. • Provision of an interchange on Road 13 will create significant direct traffic impacts on Sharon and, with a Herald Road interchange, will create spacing concerns (four consecutive interchanges between Newmarket (Muloch Drive) and Sharon) • Sharon, East Gwillimbury and Newmarket can be served by interchange at Herald Road; an interchange at Road 13 would not be as beneficial to the area road network.
York Road 77 (Queensville Sideroad)	<ul style="list-style-type: none"> • With a northern route alternative (i.e. any B route alternative), not providing an interchange at Queensville Sideroad will create spacing concerns (too far between interchanges) • With a southern route alternative (i.e. any C route alternative), an interchange at Queensville Sideroad is required in addition to an interchange on Woodbine Avenue to serve central East Gwillimbury and western Georgina (including Keswick).
York Road 8 (Woodbine Avenue), York Road 32 (Ravenshoe Road) and York Road 3 (Kennedy Road)	<p style="text-align: center;">NORTHERN ROUTE ALTERNATIVES</p> <p><u>Route B1A</u></p> <ul style="list-style-type: none"> • An interchange is required at Woodbine Avenue to serve Keswick. • An additional interchange is warranted to serve western Georgina/northern East Gwillimbury. Given the proximity of the Highway 404 crossing of Ravenshoe Road to the Kennedy Road/Ravenshoe Road intersection, the interchange was initially proposed to be located on Kennedy Road.
York Road 8 (Woodbine Avenue), York Road 32 (Ravenshoe Road) and York Road 3 (Kennedy Road)	<p><u>Route B1B Connecting to Route B1, B2 and B3A</u></p> <ul style="list-style-type: none"> • An interchange is required at Woodbine Avenue to serve Keswick. • Given the proximity of the Highway 404 crossing of Ravenshoe to the Highway 404/Woodbine Avenue interchange, an interchange at Ravenshoe Road would generate spacing concerns. An interchange at this location would also require the implementation of less than desirable geometrics due to the limited property available between Woodbine Avenue and the Maskinonge River. • An interchange at Kennedy Road is therefore proposed to serve west Georgina.

EXHIBIT 1.B.1
ASSESSMENT OF REGIONAL ROADS FOR POTENTIAL INTERCHANGE LOCATIONS

Regional Roads Crossed	Assessment
York Road 32 (Ravenshoe Road), York Road 8 (Woodbine Avenue) and York Road 3 (Kennedy Road)	<p><u>Route B1C Connecting to Route B1, B2 and B3A</u></p> <ul style="list-style-type: none"> • The alignment of Route B1C provides sufficient property for interchanges at Ravenshoe Road and Woodbine Avenue. • An interchange at Kennedy Road is proposed as well to serve west Georgina.
York Road 18 (Park Road)	<p><u>Routes B1, B2 and B3</u></p> <ul style="list-style-type: none"> • The Sutton area would be well served with an interchange on Highway 48. An interchange on Road 18 is not warranted.
York Road 21 (Pefferlaw Road) and Durham Road 23	<ul style="list-style-type: none"> • An interchange on Pefferlaw Road would create significant property and social impacts on the community of Pefferlaw. These impacts would appear to be reduced with an interchange on Durham Road 23, without a significant impact on access to the area. • An interchange is proposed, therefore, on Durham Road 23.
York Road 8 (Woodbine Avenue) and York Road 3 (Kennedy Road)	<p>SOUTHERN ROUTE ALTERNATIVES</p> <p><u>Route C</u></p> <ul style="list-style-type: none"> • Along with the interchange on Queensville Sideroad, an interchange is warranted on Woodbine Avenue to serve central East Gwillimbury and western Georgina (including Keswick). • An interchange would also be warranted at Kennedy Road to serve western Georgina and central East Gwillimbury.
Durham Road 39	<ul style="list-style-type: none"> • Central Georgina (including Sutton) and western Uxbridge Township would be well served with an interchange on Highway 48. The southern portion of the study area does not contain areas of concentrated development. In addition, access for emergency vehicles serving this area (primarily from Uxbridge) would be provided via the existing road network. Therefore, additional interchanges in this area are not warranted.
Durham Road 13	<p><u>Routes C1 and C2</u></p> <ul style="list-style-type: none"> • Western Uxbridge Township would be well served with an interchange on Highway 48. Eastern Uxbridge Township would be served by an interchange in the Udora area. The southern portion of the study area does not contain areas of concentrated development. In addition, access for emergency vehicles serving this area (primarily from Uxbridge) would be provided via the existing road network. Therefore, additional interchanges in this area are not warranted.

EXHIBIT 1.B.1
ASSESSMENT OF REGIONAL ROADS FOR POTENTIAL INTERCHANGE LOCATIONS

Regional Roads Crossed	Assessment
Durham Road 1 and Durham Road 23	<ul style="list-style-type: none"> • Interchange is warranted in this area to serve Pepperlaw/Port Bolster area, as well as Udora/ Leaskdale/western Brock Township areas. • Not providing an interchange in this area would create spacing concerns (too far between interchanges). • Both Roads 1 and 23 are somewhat discontinuous, however locating the interchange on Road 1 may generate traffic impacts through Udora. • Interchange initially proposed, therefore, on Durham Road 23.
Durham Road 12 Durham Road 15 Durham Road 23	<p><u>Routes D1, D2A, D2B, D2C, D2D and D2E</u></p> <ul style="list-style-type: none"> • Brock Township would be well served with an interchanges at Highway 7 and Highway 12/48. • In addition, access for emergency vehicles serving this area would be provided via the existing road network. Therefore, an additional interchange in this area is not warranted. <p>NORTHEASTERN ROUTE ALTERNATIVES</p> <p><u>Routes E1 and E2</u></p> <ul style="list-style-type: none"> • Beaverton area supports sufficient concentrated development to warrant an interchange in this location. • Interchange initially proposed, therefore, on Durham Road 15. • Northern Brock Township well served by interchanges at Highway 12/48, Highway 48 (northern terminus) and Durham Road 15. • In addition, access for emergency vehicles serving this area would be provided via the existing road network. Therefore, an additional interchange in this area is not warranted.

**EXHIBIT 1.B.2
NORTHERN ROUTE ALIGNMENT**

INTERCHANGE	RAMP	TYPE	ASSUMED CAPACITY	2021 AM VOLUME	DESIGN VOLUME
Davis Dr	N-EW	Double Direct	1800	1640	1700
	S-EW	Double Direct	1800	590	1500
	E-N	Direct	1200	80	900
	E-S	Loop	750	610	600
	W-N	Loop	750	170	750
	W-S	Direct	1200	820	800
Herald Rd/Green Lane	N-EW	Direct	1200	1140	1200
	S-EW	Double Direct	1800	300	1400
	E-N	Direct	1200	0	100
	E-S	Loop	750	570	600
	W-N	Loop	750	290	300
	W-S	Direct	1200	810	800
Queensville Rd	N-EW	Direct	1200	940	900
	S-EW	Direct	1200	60	700
	E-N	Direct	1200	70	100
	E-S	Loop	750	200	300
	W-N	Loop	750	570	600
	W-S	Direct	1200	330	400
Ravenshoe Rd	S-EW	Double Direct	1800	580	1500
	E-S	Loop	750	290	300
	W-S	Direct	1200	1140-1180	1200
Woodbine Ave	N-E	Loop	750	210	200
	N-W	Double Direct	1800	1400-1580	1600
	S-E	Direct	1200	10	100
	S-W	Loop	750	0	100
	E-NS	Direct	1200	950	1000
	W-NS	Double Direct	1800	270	1600
Kennedy Ave	N-E	Loop	750	100	100
	N-W	Direct	1200	490	500
	S-E	Direct	1200	180	600
	S-W	Loop	750	0	100
	E-NS	Direct	1200	640	700
	W-NS	Direct	1200	80	500
Highway 48 (N-S)	N-E	Loop	750	70	100
	N-W	Direct	1200	800	800
	S-E	Direct	1200	40	400
	S-W	Loop	750	10	100
	E-NS	Direct	1200	460	500
	W-NS	Direct	1200	680	800
Durham Regional Rd 23	N-E	Loop	750	0	100
	N-W	Direct	1200	380	400
	S-E	Direct	1200	0	100
	S-W	Loop	750	570	600
	E-NS	Direct	1200	30	100
	W-NS	Direct	1200	340	400
Highway 12/48	N-EW	Direct	1200	90	100
	S-EW	Direct	1200	10	700
	E-N	Direct	1200	0	100
	E-S	Loop	750	180	200
	W-N	Loop	750	20	100
	W-S	Direct	1200	400	400
Durham Regional Rd 15	N-EW	Direct	1200	20	100
	S-EW	Direct	1200	0	750
	E-N	Direct	1200	10	100
	E-S	Loop	750	740	750
	W-N	Loop	750	0	100
	W-S	Direct	1200	0	100
Highway 48 (E-W)	S-EW	Double Direct	1800	60	1400
	E-S	Loop	750	470	500
	W-S	Direct	1200	930	900

**EXHIBIT 1.B.2
SOUTHERN ROUTE ALIGNMENT**

INTERCHANGE	RAMP	TYPE	ASSUMED CAPACITY	2021 AM VOLUME	DESIGN VOLUME
Davis Dr	N-EW	Double Direct	1800	1490	1500
	S-EW	Direct	1200	580	1300
	E-N	Direct	1200	90	200
	E-S	Loop	750	510	500
	W-N	Loop	750	160	200
	W-S	Direct	1200	820	800
Herald Rd/Green Lane	N-EW	Direct	1200	1280	1300
	S-EW	Direct	1200	280	1400
	E-N	Direct	1200	0	100
	E-S	Loop	750	530	500
	W-N	Loop	750	300	300
	W-S	Direct	1200	760	800
Queensville Rd	S-EW	Direct	1200	60	200
	E-S	Loop	750	40	100
	W-S	Direct	1200	150	200
Leslie St	S-W	Direct	1500	100	1100
	W-E	Loop	1000	70	100
	W-S	Direct	1500	1000	1000
Woodbine Ave	N-E	Loop	750	150	200
	N-W	Double Direct	1800	1570	1600
	S-E	Direct	1200	420	400
	E-NS	Direct	1200	1420	1400
	W-NS	Double Direct	1800	390	1600
Kennedy Rd	N-E	Loop	750	60	100
	N-W	Direct	1200	670	700
	S-E	Direct	1200	0	100
	S-W	Loop	750	0	100
	E-NS	Direct	1200	710	700
	W-NS	Direct	1200	70	700
Highway 48 (N-S)	N-E	Loop	750	0	100
	N-W	Direct	1200	800	800
	S-E	Direct	1200	40	100
	S-W	Loop	750	190	200
	E-NS	Direct	1200	560	600
	W-NS	Direct	1200	730	1000
Durham Regional Rd 23	N-E	Loop	750	0	100
	N-W	Direct	1200	760	800
	S-E	Direct	1200	110	100
	S-W	Loop	750	490	500
	E-NS	Direct	1200	100	100
	W-NS	Direct	1200	220	1300
Highway 7	N-EW	Direct	1200	130	100
	S-EW	Direct	1200	70	750
	E-N	Direct	1200	10	100
	E-S	Loop	750	520-750	750
	W-N	Loop	750	0	100
	W-S	Direct	1200	0	100
Highway 12/48	N-EW	Direct	1200	190	200
	S-EW	Direct	1200	10	100
	E-N	Direct	1200	0	100
	E-S	Loop	750	0	100
	W-N	Loop	750	20	100
	W-S	Direct	1200	60	100
Durham Regional Rd 15	N-EW	Direct	1200	10	100
	S-EW	Direct	1200	70	900
	E-N	Direct	1200	0	100
	E-S	Loop	750	520-740	750
	W-N	Loop	750	0	100
	W-S	Direct	1200	180	200
Highway 48 (E-W)	S-EW	Double Direct	1800	70	1300
	E-S	Loop	750	290-470	500
	W-S	Direct	1200	520-850	900

1.2 RESULTS OF THE VERIFICATION PROCESS

The results of the modelling exercise identified two areas on each route alternative where forecast traffic volumes approached the capacity of the interchange ramps.

1.2.1 Southern Route Alternative

The Highway 7 interchange and the Durham Road 15 interchange were forecast to have an interchange ramp (in both cases, the E-S loop) operating at capacity. In both cases, the interchange is situated in proximity to external zones where the trip generation data is much coarser, and hence less reliable, than the rest of the study area (refer to Appendix 1.A). Trip data from the external zones is valid for modelling network alternatives since it provides a general indication of trip volumes and movements; such data, however, is limited in its reliability for modelling detailed assignments, such as interchange ramp volumes.

A subjective assessment of the model output would suggest that, given the lack of concentrated development east of Highway 404 in the vicinity of these interchanges, the traffic volumes on these ramps will be much lower than the ramp capacity. No additional interchanges are warranted, therefore, on the southern route alternative.

1.2.2 Northern Route Alternative

As with the southern route alternative, the Durham Road 15 interchange was forecast to have an interchange ramp (the E-S loop) operating at capacity. As discussed previously, the reliability of the data available in this portion of the study area for modelling detailed assignments, such as interchange ramp volumes, is limited. Traffic volumes on these ramps to be much lower than the ramp capacity and, therefore, no additional interchanges are warranted in this area.

The interchanges in the Keswick area (Ravenshoe Road and Woodbine Avenue) were also shown to have several ramps operating at or near capacity. Unlike the other interchanges where capacity concerns were identified, trip data in the western Georgina area is quite refined and suitable for modelling detailed assignments. Additional interchanges were therefore developed to improve traffic operations on the area road network and highway interchanges.

Based on both the initial manual assignment of freeway-eligible trips originating in western Georgina and the traffic model output, it was evident that significant impacts to traffic operations in the Keswick area would result with any of the route alternatives. Interchanges in the west Georgina area were initially proposed to be closely spaced at the south end of Keswick in the Ravenshoe Road/Woodbine Avenue area. Traffic would collect on The Queensway, Ravenshoe Road and Woodbine Avenue to access either interchange. Projected traffic volumes during peak travel periods meet or exceed the capacity of the road network in this area.

An opportunity was identified with alternative B3B to improve traffic operations on the road network in the vicinity of Keswick by locating an interchange along Pollock Road. Such an interchange would:

- provide an alternative access for Keswick, thereby improving traffic distribution and reducing traffic operation impacts on the road network in the area of the Woodbine Avenue and Ravenshoe Road interchanges;
- provide improved access to northern Keswick and communities on the south shore of Lake Simcoe, thereby reducing the traffic demands on the road network south of Morton Avenue.

With an interchange on route alternative B3B at Pollock Road, the interchange at Kennedy Road was no longer warranted. An interchange on Pollock Road was therefore incorporated as part of route alternative B3B.

The alignments of route alternatives B1A and B1B, initially provided for an interchange Woodbine Avenue only (the Ravenshoe Road crossing is too close to enable another interchange without creating spacing concerns). The manual assignment of freeway-eligible trips generated by Keswick and western Georgina indicated the need to provide additional ramp capacity. An initial solution to providing the required ramp capacity was to provide a partial interchange (no access to northbound Highway 404) at the Boag Road crossing of Highway 404.

Boag Road is a two-lane local road which does not satisfy any of the design considerations for locating intersections. The proximity of Boag Road to Ravenshoe Road (it is the first road south of Ravenshoe Road between Woodbine Avenue and Leslie Street) creates an opportunity to serve the south end of Keswick. This location was not recommended for an interchange, however, because the traffic volumes served by this interchange would be limited by the left-turn requirements at the Boag Road/Leslie Street and Boag Road/ Woodbine Avenue intersections. In addition, congestion and delays along Leslie Street, Boag Road and Woodbine Avenue as a result of the above would discourage commuters from using the highway and result in long-distance traffic using the regional road network, thereby increasing impacts to a much wider area of the road network.

Another solution to providing the required ramp capacity at the south end of Keswick was to construct ramps connecting Ravenshoe Road to the extension of Highway 404. Such an interchange configuration would provide a direct connection to Ravenshoe Road to serve the south end of Keswick, supplementing the ramp capacity provided by the Woodbine Avenue interchange. A preliminary assessment of this alternative indicated that the south end of Keswick (particularly the South Keswick Secondary Planning Area) would be well served with such a connection, provided that the ramp terminals on Ravenshoe Road did not align directly with any collector roads north of Ravenshoe Road. This partial interchange was not incorporated in the Technically Preferred Route since the two interchanges proposed for the Keswick area (at Woodbine Avenue south of Ravenshoe and on

Pollock Road) provide suitable access for the community. A partial interchange at Ravenshoe Road could be provided under a municipal initiative.

The resulting set of interchanges associated with the route alternatives in the vicinity of Keswick incorporated in the analysis and evaluation of the route alternatives is shown in Exhibit 1.B.3.

1.2.3 Mount Albert Sideroad

An interchange at Mt. Albert Sideroad was investigated in response to concerns raised by municipal staff and interested individuals to determine if traffic impacts in area of Sharon associated with the proposed extension of Highway 404 warrant an interchange. Sharon is a community in close proximity to the proposed highway which may benefit from direct access via an interchange on Mt. Albert Sideroad. However, concerns were also expressed by municipal staff and interested individuals that Mt. Albert Sideroad and the community of Sharon may experience significant traffic operation and social impacts associated with increased traffic volumes on Mt. Albert Sideroad.

Without an interchange on Mt. Albert Sideroad, Sharon commuters would access Highway 404 via Leslie Street, Woodbine Avenue and the interchange at Herald Road/Green Lane. Traffic volumes on Leslie Street and Woodbine Avenue would be substantially reduced once the extension of Highway 404 was in place (with either the northern or southern route alternative), thereby enabling Sharon commuters to access either facility.

A scenario with an interchange at Mt. Albert was tested using traffic modelling techniques. With this interchange, traffic volumes on Mt. Albert Sideroad would increase significantly compared to the "without Mt. Albert interchange" scenario, and traffic volumes on Leslie Street and Woodbine Avenue would decrease slightly. To accommodate the increased traffic volumes and provide the necessary storage requirements for Highway 404 interchange ramps, Mt. Albert Sideroad would be required to be widened to four lanes between Leslie Street and Woodbine Avenue.

Output from the model indicated that part of the increased traffic on Mt. Albert Sideroad was due to traffic using Mt. Albert Sideroad to travel between Highway 404 and areas west of Leslie Street. Without a Mt. Albert interchange, this traffic would use the Herald Road/Green Lane interchange, thereby reducing impacts to the road network in this area.

Based on the above information, an interchange at Mt. Albert Sideroad is not warranted.

INTERCHANGE,
GRADE SEPARATION
AND ROAD
CLOSINGS LOCATIONS

LEGEND

STUDY AREA LIMIT

ROUTE ALTERNATIVE

INTERCHANGE

GRADE SEPARATION

ROAD CLOSED

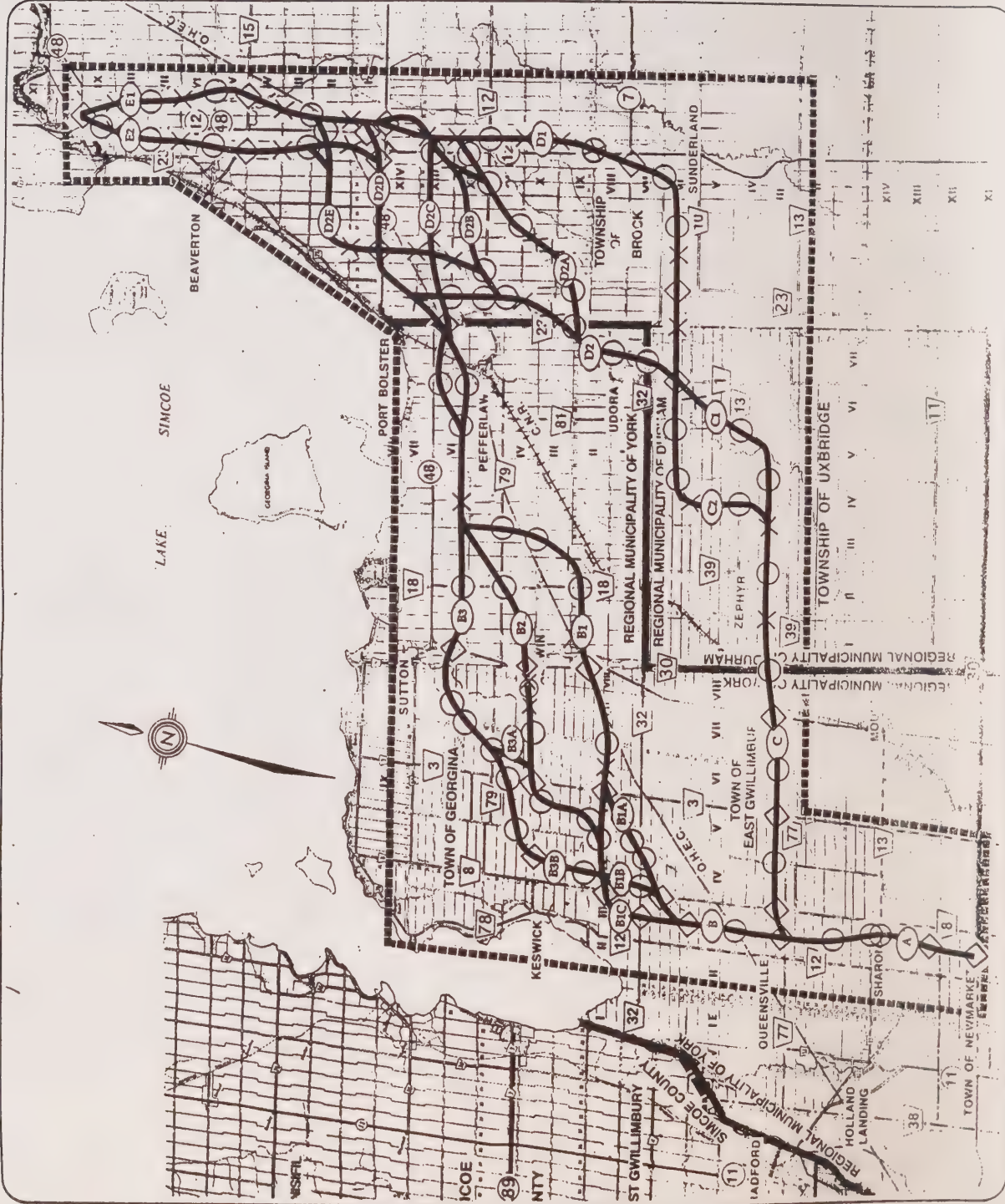


HIGHWAY 404
EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

Ontario
Ministry of Transportation

EXHIBIT
1.B.3



2.0 ROUTE REFINEMENTS

Thirteen route refinements were implemented to reduce the overall impacts, based on input received from consultation events. As a result, interchange location assumptions were revisited at three locations, to verify that the assumed locations were appropriate. The results of this assessment are shown in Exhibit 1.B.4.

3.0 CROSSING ROAD TREATMENT ASSUMPTIONS

Exhibit 1.B.5 lists the assumed treatments for crossing roads for each of the route alternatives and a brief rationale.

The crossing road treatments assumed for the analysis and evaluation of route alternatives are illustrated in Exhibit 1.B.3.

4.0 TECHNICALLY PREFERRED ROUTE

The crossing road treatment assumptions identified above were developed for route segments. The assumptions will be maintained throughout the evaluation process, as the preferred route segments are identified and combined for further comparison.

Once the Technically Preferred Route is identified, the crossing road treatment assumptions will be revisited to assess the suitability of the proposed treatments for a highway extending from Davis Drive to Highway 12.

Road closures will be identified by the Project Team only where the crossing road is not a continuous principal road, alternate access is available within a reasonable distance of the road closure, and land uses fronting the closed road are rural residential and/or agricultural.

EXHIBIT 1.B.4
ASSESSMENT OF REGIONAL ROADS ALONG ROUTE REFINEMENTS
FOR POTENTIAL INTERCHANGE LOCATIONS

Route	Regional Roads Crossed	Assessment
B1A	York Road 32 (Ravenshoe Road) and York Road 3 (Kennedy Road)	<ul style="list-style-type: none"> • Original route crossed Ravenshoe Road near Kennedy Road, east of village of Ravenshoe, restricting design of interchange. Refined route crosses Ravenshoe Road west of 5th Concession. • An additional interchange is warranted to serve western Georgina/northern East Gwillimbury. Given the proximity of the interchange at Woodbine Avenue, traffic distribution in this part of the study area would likely be best served by an interchange spaced between Keswick and Highway 48. • An interchange is therefore proposed at Kennedy Road.
C1 connecting to D1	Durham Road 1, York Road 32, York Road 82 and Durham Road 23	<ul style="list-style-type: none"> • Interchange is warranted in this area to serve Udora/ Leaskdale/western Brock Township areas, as well as Pefferlaw/Port Bolster area. • Not providing an interchange in this area would create spacing concerns (too far between interchanges). • Locating the interchange on Road 1 may generate traffic impacts through Udora, but this location serves largest catchment area. • Locating the interchange on Road 32 may generate significant traffic impacts, community impacts and natural environment impacts, due to the proximity of the route to both Udora and the Uxbridge Brook. • Locating the interchange on Road 82 or Road 23 may generate significant out-of-way travel impacts for Udora and Leaskdale traffic. • Interchange proposed at Durham Road 1
C2 or C1 connecting to D1	Durham Road 1 and Durham Road 23	<ul style="list-style-type: none"> • Interchange is warranted in this area to serve Udora/ Leaskdale/western Brock Township areas, as well as Pefferlaw/Port Bolster area. • Not providing an interchange in this area would create spacing concerns (too far between interchanges). • Both crossing roads are somewhat discontinuous. • Locating the interchange on Road 1 may generate traffic impacts through Udora. • Interchange therefore proposed at Durham Road 23.

**EXHIBIT 1.B.5
PROPOSED ROAD CLOSING LOCATIONS**

Crossing Road	Assessment
	<p>NORTHERN ROUTE ALTERNATIVES</p> <p><u>Route B1A</u></p> <ul style="list-style-type: none"> • Discontinuous local road, primarily serving adjacent agricultural uses. • Road closing would result in lower property impacts to adjacent properties than a grade separation. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts.
Carly Road	
Frog Street (3rd Concession)	<ul style="list-style-type: none"> • Road terminates immediately east of proposed alignment; grade separation not justified.
	<p><u>Route B2</u></p> <ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Cryderman's Sideroad	
Valleyview Drive	<ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent residential and agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Stoney Batter Road	<ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses east and west of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

**EXHIBIT 1.B.5
PROPOSED ROAD CLOSING LOCATIONS**

Crossing Road	Assessment
Second Concession (Uxbridge)	<p>SOUTHERN ROUTE ALTERNATIVES</p> <p><u>Route C</u></p> <ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourth Concession (Uxbridge)	<ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Brewster's Sideroad	<p><u>Route C1</u></p> <ul style="list-style-type: none"> • Unopened road allowance • Grade separation is not justified at this location.
Brewster's Sideroad	<p><u>Route C2</u></p> <ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses east and west of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Kydd Lane	<p><u>Route D1</u></p> <ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent residential and agricultural uses. • Much of the adjacent lands likely to be displaced or significantly impacted due to width and depth of excavation for highway. • Grade separation is not justified at this location.
Sideroad 17A (Brock)	<ul style="list-style-type: none"> • Discontinuous local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

**EXHIBIT 1.B.5
PROPOSED ROAD CLOSING LOCATIONS**

Crossing Road	Assessment
Ninth Concession (Brock)	<ul style="list-style-type: none"> • Road terminates immediately east of proposed alignment; grade separation not justified.
Tenth Concession (Brock)	<ul style="list-style-type: none"> • Road terminates immediately east of proposed alignment; grade separation not justified.
Eleventh Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Thirteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Tenth Concession (Brock)	<p><u>Route D2A</u></p> <ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses east and west of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Seventeenth Sideroad (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses east and west of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

**EXHIBIT 1.B.5
PROPOSED ROAD CLOSING LOCATIONS**

Crossing Road	Assessment
Thirteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Tenth Concession (Brock)	<p><u>Route D2B</u></p> <ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate access south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Eleventh Concession (Brock)	<ul style="list-style-type: none"> • Unopened road allowance serving as a recreational (snowmobile) trail. • Grade separation is not justified at this location (Mitigation for trail closure to be determined).
Thirteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate access south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

**EXHIBIT 1.B.5
PROPOSED ROAD CLOSING LOCATIONS**

Crossing Road	Assessment
Thirteenth Concession (Brock)	<u>Route D2C</u> <ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourth Sideroad (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate access north of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<u>Route D2D</u> <ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate access east of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourteenth Concession (Brock)	<u>Route D2E</u> <ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Second Line (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

EXHIBIT 1.B.5 PROPOSED ROAD CLOSING LOCATIONS

Crossing Road	Assessment
	<p>NORTHEASTERN ROUTE ALTERNATIVES</p> <p><u>Routes E1 and E2</u></p>
Second Line (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Fourth Line (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Seventh Line (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.
Ninth Line (Brock)	<ul style="list-style-type: none"> • Local road primarily serving adjacent agricultural uses. • Access to adjacent lands not significantly impacted because alternate accesses north and south of closing would reduce out-of-way travel impacts. • Grade separation is not justified at this location.

APPENDIX 1.C UNIT COSTS

CONSTRUCTION COST UNIT PRICES

These construction unit prices were used to develop comparative cost estimates only for the purposes of evaluation. More detailed cost information will be developed at the next design stage.

▪ 4 LANE HIGHWAY (NEW)	\$1.5 million/km *
▪ 2 LANE HIGHWAY (NEW)	\$1.0 million/km
▪ 2 LANE HIGHWAY (TWIN)	\$600,000/km
▪ WIDENING 2-4 LANES WITH BARRIER	\$1.0 million/km
▪ WIDENING 2-4 LANES, NO BARRIER	\$600,000/km
▪ SERVICE ROAD (2 LANES)	\$300,000/km
▪ INTERCHANGES	L.S. \$4.5 million
▪ INTERSECTION (FULL)	L.S. \$300,000
▪ INTERSECTION (RIGHT IN, RIGHT OUT)	L.S. \$100,000
▪ GRADE SEPARATION	L.S. \$2.2 million
▪ STRUCTURE	\$42,000/m span (\$1,500/m ²)
▪ MAJOR CULVERTS	L.S. \$300,000

* Excavation factors were incorporated in areas of severe terrain and through wetlands

NOTE: UNIT PRICES PROVIDED BY MTO
QUANTITIES TAKEN FROM 1:10,000 SCALE PLANS.

LAND VALUE RATES

These land value rates were used to develop comparative cost estimates only for the purposes of evaluation.
More detailed cost information will be developed at the next design stage.

CATEGORY	NEWMARKET (TOWN)	E. GWILLIMBURY (LOTS 1-20, CON. 3-5)	BROCK, UXBRIDGE GEORGINA & E. GWILLIMBURY (REMAINDER)	UNIT
WETLAND	N/A	\$0.08	\$0.08	sq. m.
BUSHLAND	N/A	\$0.25 - \$35	\$0.12	sq. m.
AGRICULTURAL (V.L. +50 AC.)	N/A	\$1.00 - \$1.50	\$0.38 - \$0.50	sq. m.
AGRICULTURAL (IMP. +50 AC.)	N/A	\$1.20 - \$1.70	\$0.50 - \$0.60	sq. m.
HORSE FARM (+20 AC.)	N/A	\$5.00	\$3.25	sq. m.
FUTURE DEVELOPMENT LAND (<10 AC.) (ADJACENT TO BUILT-UP AREAS)	\$18.00 - \$24.00	\$5.00	\$3.50	sq. m.
FUTURE DEVELOPMENT LAND (+50 AC.) (ADJACENT TO BUILT-UP AREAS)	\$8.00 - \$12.00	\$2.50 - \$4.00	\$0.85 - \$1.25	sq. m.
RESIDENTIAL (STANDARD VACANT BUILDING LOT UP TO 1 AC.)	\$80,000	\$65,000	\$30,000 - \$50,000	per site
RESIDENTIAL (SMALL HOUSE/COTTAGE)	\$120,000	\$110,000	\$75,000 - \$100,000	entire property
RESIDENTIAL (AVERAGE HOUSE)	\$150,000	\$140,000	\$130,000	entire property
RESIDENTIAL (LARGE HOUSE)	\$200,000	\$180,000	\$160,000	entire property
ESTATE RESIDENTIAL (V.L. 10 AC.)	\$6.00 - \$8.00	\$3.50	\$1.50	sq. m.
ESTATE RESIDENTIAL (V.L. 25 AC.)	N/A	\$1.50	\$0.80	sq. m.
WATERFRONT (STANDARD VACANT LOT)	N/A	N/A	\$75,000 - \$90,000	per site
WATERFRONT (IMPROVED LOT)	N/A	N/A	\$130,000 - \$150,000	entire property
COMMERCIAL (STD. VACANT LOT)	\$100.00	\$25.00	\$15.00 - \$20.00	sq. m.
COMMERCIAL (IMP. CONVERTED RESIDENCE)	N/A	N/A	\$85,000 - \$120,000	entire property
INDUSTRIAL LOTS (1-2 AC.)	\$20.00 - \$37.00	N/A	N/A	sq. m.
INDUSTRIAL (+10 AC.)	\$8.00 - \$10.00	\$5.00	\$2.50	sq. m.
INDUSTRIAL (AGGREGATE EXTRACTION SITE)	N/A	N/A	\$2.00	sq. m.

It should be noted that values for the mineral/aggregate extraction sites are for land value only. The Income Approach could be utilized to indicate a detailed account of income loss to the operation. Supply and demand, royalty rates and present worth would comprise elements of this approach. In addition, the repositioning of berms, required set-backs and rehabilitation of the site would be considered.

APPENDIX 2 NOISE IMPACT REPORT

SS WILSON ASSOCIATES

Consulting Engineers

REPORT NO. W95-14

**ROADWAY NOISE IMPACT STUDY
PROPOSED HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12**

SUBMITTED TO :

**COLE, SHERMAN & ASSOCIATES LTD.
75 COMMERCE VALLEY DRIVE EAST
THORNHILL, ONTARIO
L3T 7N9**

PREPARED BY :

HAZEM GIDAMY, P.Eng.

TAREK ZAYED, P. Eng.

SEPTEMBER 16, 1997

**ROADWAY NOISE IMPACT STUDY
PROPOSED HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12**

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APPENDIX E: RANKING OF THE ALTERNATIVE ROUTES

APPENDIX F: SOUND LEVEL RESULTS FOR THE PREFERRED ROUTE

1.0 INTRODUCTION

- 1.1 The services of SS Wilson Associates were retained by Cole, Sherman & Associates Ltd. to prepare an environmental noise impact study for the traffic associated with the proposed Highway 404 extension from Davis Drive to Highway 12. **Figure 1** illustrates the Study Area.
- 1.2 The objectives of this study are:
 - a. To determine the potential changes to the existing noise environment due to the proposed Highway 404 Extension.
 - b. To analyze and evaluate the alternative routes for the proposed new highway in order to assist the Study Team in selecting a preferred alternative route.
 - c. To assess the significance of the above changes and to recommend measures to mitigate noise effects; where warranted.
- 1.3 At the present time, Highway 404 ends at Davis Drive. The proposed extension will be from Davis Drive to Highway 12.
- 1.4 This study represents a joint effort with the Ministry of Transportation and the Consulting Engineering firm Cole, Sherman & Associates Ltd. which provided the necessary road and traffic data, and the overall project direction.
- 1.5 Elevations and distances were scaled from preliminary design plans and profiles prepared by Cole, Sherman & Associates Ltd..

2.0 SOUND LEVEL CRITERIA

2.1 MOEE/MTO PROTOCOL

THE MOEE/MTO Protocol is a joint effort of both the MOEE and MTO as outlined in the document titled "A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments", February 1986. It primarily applies to Provincial highway undertakings such as Freeways and King's Highways.

Despite the presence of a Provincial objective for outdoor levels of Leq 55 dBA, the decision for mitigation depends also on the significance of the excess of future road expansion above the "Do-Nothing" situation.

With regards to the specific sound level criteria, the following statements are quoted from the Protocol:

1. The objective for outdoor sound levels is the **higher of the Leq 55 dBA or the existing ambient**. The significance of a noise impact will be quantified by using this objective in addition to the change in noise level above the ambient.
2. Mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically and administratively feasible.
3. **Table 1** summarizes the degree of mitigation effort to be applied for various sound level increases.

Appendix A includes a copy of the MOEE/MTO Protocol for Provincial Highways Noise.

2.2 MTO QST DIRECTIVE A-1

The following are some of the applicable highlights of the MTO Directive supplemented also by our previous discussions with the MTO:

1. The MOEE/MTO Protocol is the applicable technical guide and all assessment work to be performed for the outdoors.
2. No subsidy for off R-O-W mitigation.

TABLE 1

SUMMARY OF MITIGATION EFFORT

CHANGE IN NOISE LEVEL ABOVE AMBIENT	MITIGATION EFFORT
0 - 5 dBA	- None
> 5 dBA	<ul style="list-style-type: none"> - Investigate noise control measures on R.O.W. - If project cost is not significantly affected introduce noise control measure within R.O.W. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers. - Mitigate to ambient, as administratively, economically and technically feasible.

3.0 ANALYSIS AND RESULTS

3.1 NOISE IMPACT METHODOLOGY

1. Noise is generally defined as any unwanted sound. In this case, the noise under consideration is the road traffic noise perceived in the area along the proposed Highway 404 extension corridor.

Noise impact is a comparative evaluation of the new or intruding noise versus the existing or ambient noise in the area. Noise impact is also a comparative evaluation of the new or intruding noise versus a preset sound level limit (criterion) such as Leq 55 dBA. The degree of noise impact varies directly as the ratio between the intruding and existing noise levels; i.e. the more the intruding noise level exceeds the existing noise level, the higher the impact.

Since the proposed corridor traffic noise represents a future consideration, predictions should be made as to sound levels which will be generated by the Highway 404 extension corridor traffic after the roadway has been in operation for a period of at least 10 years.

2. Road traffic sound levels in this study have been predicted using the technique developed by the U.S. Federal Highway Administration (FHWA) enhanced by the Ministry of Transportation and the Ministry of Environment and Energy. ORNAMENT Model was used in calculating the predicted sound levels in this study.

The U.S. FHWA model was jointly revised by the MTO and the MOEE to incorporate procedures for the calculation of excess attenuation due to ground. The computerized version of the ORNAMENT model, STAMSON 5.03 was used for calculating the sound levels. The technical data of the ORNAMENT model and the various adjustments are summarized in **Appendix B.**

3. The calculations are primarily based on the average daily traffic volumes, percentages of medium and heavy trucks, posted speed limits, road to receptor distance, elevation differential between the road and the receptor, roadway gradient, pavement type and the type of ground cover between the road and the receptor in question.

Based on the MTO Directives, the equivalent sound level in dBA; Leq corresponding to the average hourly volume of traffic based on the AADT and/or the SADT data was used, i.e. Leq₂₄ in dBA.

4. Ambient (or existing) sound levels along the proposed route are largely due to road traffic on the existing roadways in the area. In this study, ambient sound levels were derived by calculations based on the future-do-nothing road traffic data using the methods referenced above.
5. The ORNAMENT/FHWA models are reasonably accurate within a tolerance of ± 1.5 dB up to a distance of 500 metres from the roadway. Beyond 500 metres, the accuracy of the models may be reduced to ± 2.5 dBA depending on the complexity of the propagation path and the proposed road geometrics.
6. The ORNAMENT/FHWA models have been used extensively in Ontario since the early 1980's in the preparation of numerous Environmental Assessments of Provincial undertaking and Municipal roadway undertakings.

3.2 STUDY OF THE ALTERNATIVE ROUTES

3.2.1 The Use of the Generalized Sound Level Contours

Noise contours were partly used in this study to present the predicted sound levels at certain distances from the highway and at a number of locations on both sides of the highway. For example, within the 55 dBA contour lines on either side of Highway 404, it is possible to evaluate the number of properties experiencing such a level, furthermore, in the area bounded between the 55 dBA and 60 dBA contour lines, it is possible to quantify the number of noise sensitive receptors and carry out population counts of the people who may be affected by the proposed Highway 404. On the other hand, predicting the sound levels at individual points scattered along the highway will not easily permit the environmental noise assessment associated with the proposed Highway extension. This point-by-point approach requires more detailed input data to be provided such as ground elevations, highway longitudinal profile, cross sections at the affected points, presence of intervening structures, type of ground cover, exact distances between the affected points and the highway, etc. Most of the above noted data is not usually available at the preliminary design stage of the highway planning.

3.2.2 Predicted Sound Levels For The Alternative Routes:

Methodology

The procedure that was followed is to show the extent of the noise contours starting at the ambient sound level.

With knowledge of the 'change' or 'excess' sound levels, predictions of the impact assessment ratings or subjective assessment were provided in terms of "reduction, insignificant, noticeable and very significant". "Reductions" should be viewed as a positive enhancement of the noise environment due to the predicted reduction in the sound levels and "significant" is the start of the negative impact zone which is equivalent to greater than 5 dBA change in accordance with the MOEE/MTO Protocol. The results of predicted sound levels due to the alternatives have provided the Study Team with the area of concern, or influence area, beyond which noise will not be of concern.

Prediction Assumptions

Predicted sound levels for the Future-Do-Nothing (FDN) and the Future with Hwy. 404 have been performed based on the following assumptions:

- Flat gentle slope between the highway and the assessed location
- No obstacles in the intervening ground, i.e. no acoustical shielding was considered
- All sound level calculations were based on absorptive ground surface
- The height of the receiver was assumed to be 1.2m above ground
- Sound level predictions for the highway are Leq 24 in dBA
- SADT traffic volumes were used for the highway
- The only source of ambient noise is that due to the existing traffic on the roads
- The only source of future noise is that due to the traffic movements on the roads
- There is no change to the road alignments and road conditions

Analysis

The sound levels were predicted for the alternative routes based on the traffic data provided by Cole, Sherman & Associates Ltd. **Appendix C** includes the traffic data used in the analysis.

Several contour lines were evaluated for different alternatives. The results of the sound levels for the different points are included in **Appendix D**.

The following comments can be made on these results:

- a) Leq 45 dBA contour lines were selected to provide guidance to the area that may be potentially affected in the rural areas, i.e. at potential receptors located at considerable distances from other transportation sources of ambient noise within the study area.

- b) Leq 55 dBA contour lines show the locations where the objective sound levels will be met and the areas beyond which the MOEE/MTO Protocol will be met.

The developed tables were used by the Prime Consultant for plotting of the contours of equal sound levels and to assist in counting the number of residences within the selected ranges for the alternative routes as discussed in Section 3.2.3.

Results

Tables 1.D to 6.D in Appendix D show the various setback distances at which the various Leq 24 hr sound levels will be met for 3 cases; Route A, Route B and Route C. This data has been used for the route selection process.

Table 7.D shows the various setback distances at which the Leq 24 hr sound levels due to low traffic volume roads, will be met.

3.2.3 Ranking of Alternatives/Options for Noise Impact - Round 1

The route alternatives considered for the extension of Highway 404 were comprised of over 35 individual route segments. The analysis of route segments was carried out in stages, or rounds. In each round route segments between common decision points were compared, and the preferred route segment was carried forward to the next round of evaluation (for details refer to Chapter 4 of the Main Report).

Methodology

Assessment of the proposed route alternatives or options involves examination of several factors including the potential noise impact on the noise-sensitive receptors. This section discusses the generalized impact assessment procedures used in ranking the proposed route alternatives or options based on the predicted sound levels discussed previously.

Interference with speech communication, with general well-being, and with sleep are related to the general annoyance produced by the noise environment which are acceptable as indicators of effects on public well being and welfare. The results of numerous studies have shown that in the aggregate, for residential land use, the average response of groups of people as measured by the "percentage highly annoyed" is quite stably related to cumulative exposure to noise as expressed in a measure such as the equivalent sound level, Leq in dBA. For other noise-sensitive receptors such as institutional land uses and similar uses where ease of speech communication, mental and work tasks are of

primary concern, the same relationship to residential land use can be used to estimate the potential average response of people, as a group again, after taking into consideration other situational factors related to site and building designs.

Sound levels produced by the proposed undertaking vary with distance from the roadways under consideration over a large geographic area especially for linear sources. As a consequence, people occupying different geographic areas will experience different sound levels, prior to and following completion of the undertaking. The total impact of a particular noise environment is, therefore, a function of both sound level and the size of the population experiencing a particular value or within a specific range of sound levels.

The objective of this exercise is to derive single number indicators which represent quantitatively the integrated impact of the undertaking on the total population experiencing the different ranges of sound levels. The single number indicator(s) would then be used to compare or rank the proposed route alternatives or options. The primary data relating the percentage of population highly annoyed by noise to the energy averaged sound level used in this study is non-linear, two power law functions based on our examination and regression analysis of numerous noise surveys.

The "sound level weighted population", L_{wp} used in this analysis is a single number representing or combining the "extensity" (number of people exposed) and intensity (sound level) of the noise impact.

The following equation was, then, used to derive the L_{wp} :

$$L_{wp} = \sum P_{(Leq)}^i \times W_{(Leq)}^i$$

- where :
- $P_{(Leq)}$ is the population count (or population density x area) for a given Leq range.
 - $W_{(Leq)}$ is the value of the Weighting Function for general adverse response to noise corresponding to the range of Leq sound levels.
 - i is the index of the successive increments of the various ranges of Leq sound levels.

The Noise Impact Index (NII) used for comparison purposes is another useful concept or indicator for comparing the relative impact of one noise environment with that of another where the base population is not constant or for project

alternatives having different locations. It is defined as the total "sound level weighted population", total L_{wp} divided by the total population under consideration:

$$NII = \frac{L_{wp}}{P_{Total}} = \frac{\sum P_{(Leq)i} \times W_{(Leq)i}}{\sum P_{(Leq)i}}$$

Other useful procedures for impact assessment comparisons is to compute the change in the L_{wp} for the 'Do-Nothing' case with the proposed alternative for the same geographic area, based on which the change (or Delta) in L_{wp} would also serve as a good indicator.

It is important to note that the noted procedures, which are applied uniformly to the proposed alternatives or options are expected to yield reasonably consistent means for comparing different scenarios and for their ranking based on their noise impact potential and based on their demographic data. The presented results, however, should not be used for judging the acceptability of different route options with respect to the applicable sound criteria specified by the authorities having jurisdiction.

Results

The results of the ranking of the alternative routes for Round-1 are included in **Appendix E.**, **Table 1.E** shows the population count within the noted sound level contour changes for the noted alignment alternatives/options, **Tables 2.E to 6.E** provide comparisons between the route alternatives based on the predicted acoustical "change" prior to and after the project. The ranking of the alignments is also shown and is based on the total weighted population index.

It should be noted that the Weighted Population will be the same if we incorporate the number of residences since the same factor will be multiplied times each house (usually 3 to 4 residents per house). The Total Weighted Population is the one that has been used for assessing the least noise impact.

Following this first round of route segment assessment using the Weighted Population approach; the approach to assessing the route alternatives was further simplified by counting the number of affected residences within noise contour intervals. This approach identified the number of receivers affected by contour interval, based on the most recent Ontario Base Mapping of the study area, as well as by the magnitude of the potential affect. A sample analysis table displaying the results of this noise assessment for the North and South route segments is included as **Table 7.E**. The results of this assessment are comparable to those of the Weighted Population approach, since the population

of each residence was assumed to be the same. This assumption is reasonable, given the fact that most residences are single family dwellings, with very few multiple-family dwellings located in this study area.

3.3 STUDY OF THE PREFERRED ROUTE

The preferred route was selected by the Study Team by taking into consideration several factors and their relevant importance. The final selection of the preferred route was based on a number of parameters, one of which was noise associated with future roadway traffic. This selection is not necessarily the most optimum choice from the acoustical point of view.

Figure 3 shows the alignment of the preferred route.

3.3.1 Description of Sources of Ambient Noise

Ambient noise used in the context of this report is the sound level at the receptor locations without the additional noise generated by the proposed Highway extension. The future ambient has been calculated and addressed as "Future-Do-Nothing" (F-D-N) assuming the proposed undertaking does not take place.

3.3.2 Traffic Data

For the purpose of this Study, AADT volumes have been used for all the Regional and Municipal streets within the study area and SADT volumes have been used for all the highways. The traffic volumes for the F-D-N and Future with the project are for the year 2021.

All traffic volumes and associated data were provided by Cole, Sherman & Associates Ltd.

Appendix C contains the traffic data for the F-D-N and the Future with the project.

3.3.3 Description of the Receptors

For the purposes of this study, 87 receptor locations have been selected to represent the entire area surrounding the proposed undertaking which may be potentially affected by noise. In addition, the contour line technique was used to represent the area located between Weir's Side Road and Durham Road 23. This technique was used due to the high density of residences in that area. The selected receptors represent more or less, the worst impact areas along

Highway 404 (worst case scenario) from Davis Drive to Highway 12, and their selection was based on the following factors:

- Receptors were selected at different distances from Highway 404, but mostly the worst case impact receptors beyond which the predicted sound levels are lower. For example, receptor 4R9 located south of Brock Township SR17 and east of Highway 48 is selected to represent a noise sensitive location adjacent to the proposed Highway extension.
- Receptors that are close to sources of ambient noise and others which are located away from existing sources of transportation noise to show the difference in the impact. For example, Receptor 1R6 located south of York Regional Road 13 and east of Woodbine Avenue is taken to represent a high ambient location, while Receptor 2R8 located south of Pollock Road and east of Woodbine Avenue is representative of an area with very low ambient.
- Receptors that have special topographical features that are likely to increase or decrease the sound levels such as proximity to elevated sections (the road is elevated, the receptors are elevated or the presence of gullies or low lands, etc...). For example, Receptor 4R11 located south of Brock Road 17 and west of Highway 48 is elevated relative to the proposed Highway extension.
- Presence of additional acoustical shielding such as extensive vegetation. An adjustment has been made to account for the presence of dense trees , i.e. no visual path between the road and the receiver, and the height of the trees is taken to be a minimum of 5 m above the line of sight. When the wooded area is between 30 to 60 m thick, up to 5 dBA reduction was accounted for in the sound level predictions, and when it is more than 60 m thick, up to 10 dBA reduction was taken into account. This adjustment is already accounted for in the noise prediction model used throughout this study. For example, Receptor 3R18 located south of Park Road and west of Latimer Road is surrounded by a very dense wooded area more than 60 m thick.
- Receptors that are exposed to different traffic volumes and truck composition of vehicular traffic on Highway 404. For example, Receptor 3R20 located north of Stoney Batter Road and West of 6th Concession will be exposed to a low traffic volume, while Receptor 1R10 located north of Farr Avenue and west of Woodbine Avenue will be exposed to high traffic volume on the proposed Highway 404 extension.
- Proximity of some of the receptors to interchanges and ramps. For example, Receptor 2R5 is located at the proposed interchange of Highway 404 extension and Woodbine Avenue.
- Some receptor locations were chosen to represent a large number of residences (residential subdivisions or trailer parks). For example, Receptor

1R4 located south of Mount Albert Road and west of the proposed Highway 404 extension represents an entire residential subdivision, while Receptor 4R8 located north of Durham Road 23 and west of 14th Concession is selected to represent a trailer park (Summer Breeze trailer park).

- Some of the selected receptors are isolated and their predicted sound levels only represent their own location while the rest of the selected receptors represent groups of residences which are expected to experience similar noise environment. For example, Receptor 2R3 located north of Boag Side Road and west of Woodbine Avenue represents itself only.

The most predominant land use along the existing corridor is agricultural and wooded area. Plates 1 to 12 illustrate selected receptor locations along Highway 404 corridor. **Tables 1.F, 3.F, 5.F, 7.F and 9.F** provide lists of the selected receptors and the number of houses represented.

The selected receptors have been grouped into five groups based on their geographical location within the study area.

Group one covers the area from Davis Drive to Holborn Side Road and includes 19 receptors (1R1 to 1R19). Group two is between Holborn Side Road to Warden Avenue and it consists of 18 receptors (2R1 to 2R18). Group three is located between Warden Avenue to east of Stoney Batter Road and it has 20 receptors (3R1 to 3R20). Group four covers the area between east of Stoney Batter Road and Highway 12 and it contains 18 receptors (4R1 to 4R18). Group 5 covers the area between Pepperlaw Road and CN Rail, and it includes 12 receptors (5R1 to 5R12). It should be noted that the area located between Weir Side Road and Durham Road 23 was assessed using the contour lines techniques except the area covered by Group 5.

Since siting the highway avoided as many built-up areas as possible, the majority of noise impacts affect single homesteads, however certain areas of multiple-receivers will also be impacted. These areas include:

- Proposed Pollock Estates Subdivision at Pollock Road - Plate 12 (13 receivers potentially impacted)
- Elm Grove Trailer Park near Catering Road - Plate 16 (37 receivers potentially impacted)
- Green Acres Trailer Park east of Pepperlaw - Plate 25 (70 receivers potentially impacted)
- Summer Breeze Trailer Park north of Brock Concession Road 14 - Plate 27 (34 receivers potentially impacted); and
- Proposed Pepperlaw Estates - Plate 12

3.3.4 Impact Assessment

The sound levels at representative receptors have been calculated for two cases; the future-do-nothing (year 2021) and the future with the project (year 2021). **Appendix F** contains the sound level results of the preferred route.

Tables 2.F, 4.F, 6.F, 8.F and 10.F show the ambient (F-D-N) and Future with the project sound levels as well as the excesses above the F-D-N and the Leq 55 dBA criterion. They also show the acoustical significance above the F-D-N and the need, if any for noise control measures. **Table 11.F** summarizes the noise impact for the entire study area.

The summary **Table 11.F** shows the significance of the noise impact due to Highway 404 extension throughout the entire study corridor as well as the opportunity and type of noise control measures if warranted.

It is important to note that while the impact prediction tables show “very significant” or “significant” changes above the ambient, the fact remains that many of such levels are not acoustically significant above the 55 dBA objective. For example, Receptor 1R7 in **Table 2.F** is classified as a “significant” case even though its predicted level is 55 dBA, while Receptor 2R15 in **Table 4.F** is expected to experience a future Leq of 57 dBA which is considered acoustically insignificant above the Government objective of 55 dBA, however, as a result of the 12 dBA increase above the ambient, is considered “very significant”.

The proposed residential subdivision (received Draft Plan approval) known as Pollock Estates will experience a significant noise impact at the first row of houses adjacent to the proposed Highway/Ramp interchange. The predicted impact at the second row of houses and at the rest of the entire subdivision will not be significant.

A substantial number (approximately 34) of trailer homes located at the Elm Grove Trailer Park are predicted to have excesses greater than 10 dBA above their ambient. The excesses are considered to be acoustically very significant.

The Pepperlaw Brock community is already experiencing high ambient sound levels due to its proximity to the existing Highway 48. The traffic noise associated with the proposed Highway 404 extension is predicted to exceed the ambient levels by up to 5 dBA. Such an excess is considered to be an acoustically noticeable impact, but does not warrant the application of noise control measures.

The proposed Pepperlaw Estates Subdivision is predicted to experience a significant noise impact due to Highway 404 extension. Up to eight proposed houses will experience an excess over 5 dBA above their ambient which is

considered significant. This impact is mainly due to their proximity and exposure to the proposed Highway 404 extension.

Some locations within the Green Acres Trailer Park are expected to be significantly impacted by the proposed Highway 404 extension, due to their low ambient noise environment. Approximately 28 trailer locations will likely experience a significant noise impact.

The Summer Breeze Trailer Park site will be impacted by the proposed Highway 404 extension. Approximately 24 trailer Park locations will have excesses up to 10 dBA over their ambient. Such excesses are considered to be acoustically significant.

It should be noted that sound levels due to CN rail line were not taken into account when the ambient sound levels were predicted as per the MOEE criteria.

Many of these receptors are currently enjoying rural and semi-urban type of noise environment, however, as a result of the introduction of Highway 404, it is inevitable that some of these areas will be converted acoustically to moderately quiet urban setting.

It is also our observation that several receptors are located close to existing transportation corridors including Provincial highways and Regional roads and that their acoustical environment is not likely to experience a major change.

During the routine alternative selection process, we predicted that some of the existing major regional roads may experience reductions in their sound levels as a result of the transfer of vehicular traffic from such roads to the proposed Highway 404 extension.

From the results, it is concluded that some of the residences will have very significant impact and that some will have no or insignificant impact. Accordingly, some residences will require noise control measures.

3.3.5 Mitigation

Due to the fact that the noise impact on some of the receptor locations is higher than the maximum recommended by the MOEE/MTO criteria, therefore noise control measures need to be investigated.

Mitigation is warranted, according to the MOEE/MTO Protocol, if the excess above the F-D-N is greater than 5 decibels. The purpose of mitigation is to reduce (as close as administratively, economically and technically possible) the predicted future project noise levels to the objective levels. The objective levels are the higher of F-D-N noise level or $Leq(24h) = 55$ dBA.

MTO noise policies require that only on right-of-way mitigation be investigated, and only where technically, economically and administratively feasible. Thus, in several noise sensitive areas, it will be considered not practical to effectively implement noise control measures. These areas typically include houses which are isolated or too far from the right-of-way for measures such as walls or berms to be cost-effective. In addition, many of the affected houses are so far from the right-of-way that a barrier within the right-of-way would have negligible effect in lowering noise levels. A barrier will provide the greatest benefit if it effectively breaks the line-of-sight between the freeway and the receiver.

The most practical noise control measure is to construct sound barriers at appropriate locations to protect the outdoor living areas of the receptors of concern. The preferred location of the barrier is within the right-of-way of the Highway alignment to facilitate barrier maintenance by the Highway authority. A sound barrier may take the form of a berm, acoustic wall or a combination thereof.

A minimum reduction of 5 dBA at a receptor location is considered by MTO as the least sound level reduction to justify the use of a sound barrier. The 5 dBA reduction may or may not reduce the excess due to Highway 404 extension to the Government objective.

To study the technical feasibility and the practicality of constructing sound barriers for the selected receptors, additional analysis of the minimum barrier requirements has been performed. For study purposes, 5 metre high sound barriers were assumed along the Highway corridor opposite to selected receptor locations that are set back 10 to 300 metres from Highway 404 property line. For a sound barrier to be acoustically effective, it has to interrupt the line-of-sight from the receptor to the Highway for a considerable angle of exposure as shown schematically in **Figure 4**.

Throughout this study, a significant number of representative receptor locations were considered for impact assessment purposes. Many of these receptor locations were individual and isolated homesteads which are considered by the MTO ineligible for noise mitigation even if it is warranted, due to its cost ineffectiveness. There are five areas (residential subdivisions or trailer parks) where noise mitigation measures were warranted and will be discussed in the following paragraphs:

- **Pollock Estates**

If the ramp of the proposed Highway 404 extension south will be built next to the first row of the proposed houses within the Pollack Estates, then a sound barrier 5m high will be required along the ramp to mitigate the noise impact to Leq 55 dBA. The proposed 5m high sound barrier will attenuate the sound level at the impacted houses by more than 5 dBA, therefore, the barrier is technically feasible and may be economically viable.

- **Elm Grove Trailer Park**

Approximately 34 trailer locations will be impacted by the proposed Highway 404 extension. The noise impact will be up to 15 dBA above the ambient sound level which warrants the implementation of noise control measures such as an approximate 5.0m high sound barrier wall to be located along the highway. The length of such a barrier could be over 500m which although is technically feasible, may not be economically viable.

- **Pefferlaw Estates**

Eight proposed houses will experience a significant noise impact due to the proposed Highway Extension. A possible mitigation measure is the use of a sound barrier along the highway which is technically feasible, however this proposed residential subdivision is not Draft approved and thus the suggested noise control measure is not an MTO responsibility.

- **Green Acres Trailer Park**

Approximately 28 trailer locations will experience a significant noise impact due to the proposed Highway 404 extension. To mitigate such an impact, a 5m high sound barrier is suggested to be located within the right-of-way of the proposed Highway 404 extension and to extend to a total length of approximately 600m from the CNR intersection southward. Although the proposed sound barrier is technically feasible, its economical aspects should be further investigated.

- **Summer Breeze Trailer Park**

A substantial number of trailer locations will be significantly impacted within the Summer Breeze Trailer Park by the proposed Highway 404 extension. To mitigate this noise impact, a 4m high sound barrier is proposed within the right-of-way of Highway 404 for an approximate length of 750m. The proposed barrier alignment is acoustically effective and technically feasible, however, the financial aspects of such a control measure should be further investigated.

It should be noted that once this EA is approved and the corridor designated by the MTO, noise mitigation for any subsequent noise-sensitive development of an NSA impacted by the freeway becomes the responsibility of the developer. The developer would have to adhere to current provincial and applicable municipal noise guidelines.

Table 2 shows the calculated minimum barrier extents if it were to be placed on the property line of Highway 404 that is almost level with the receptor location.

TABLE 2

Distance from the Receptor to Highway 404 Property Line, (m)	Minimum Required Barrier Extent (m)	Estimate Barrier Cost* (\$)
10	35	\$35,000.00
20	70	\$70,000.00
30	105	\$105,000.00
40	140	\$140,000.00
50	175	\$175,000.00
75	260	\$260,000.00
100	350	\$350,000.00
150	520	\$520,000.00
200	700	\$700,000.00
300	1000	\$1,000,000.00

The barrier cost is based on \$200.00/sq.m.

4.0 SUMMARY AND RECOMMENDATIONS

4.1 Summary

This study has been carried out to assess all aspects related to the potential noise impact of the proposed Highway 404 extension on the noise sensitive receptor locations within the study area. The study dealt with the forecasted ambient Future-Do-Nothing (year 2021) sound levels, the future noise associated with the Highway extension and their impact on the selected noise sensitive receptor locations.

The MOEE/MTO protocol for provincial Highways Noise was used for impact assessments as well as for Noise Mitigation Requirements.

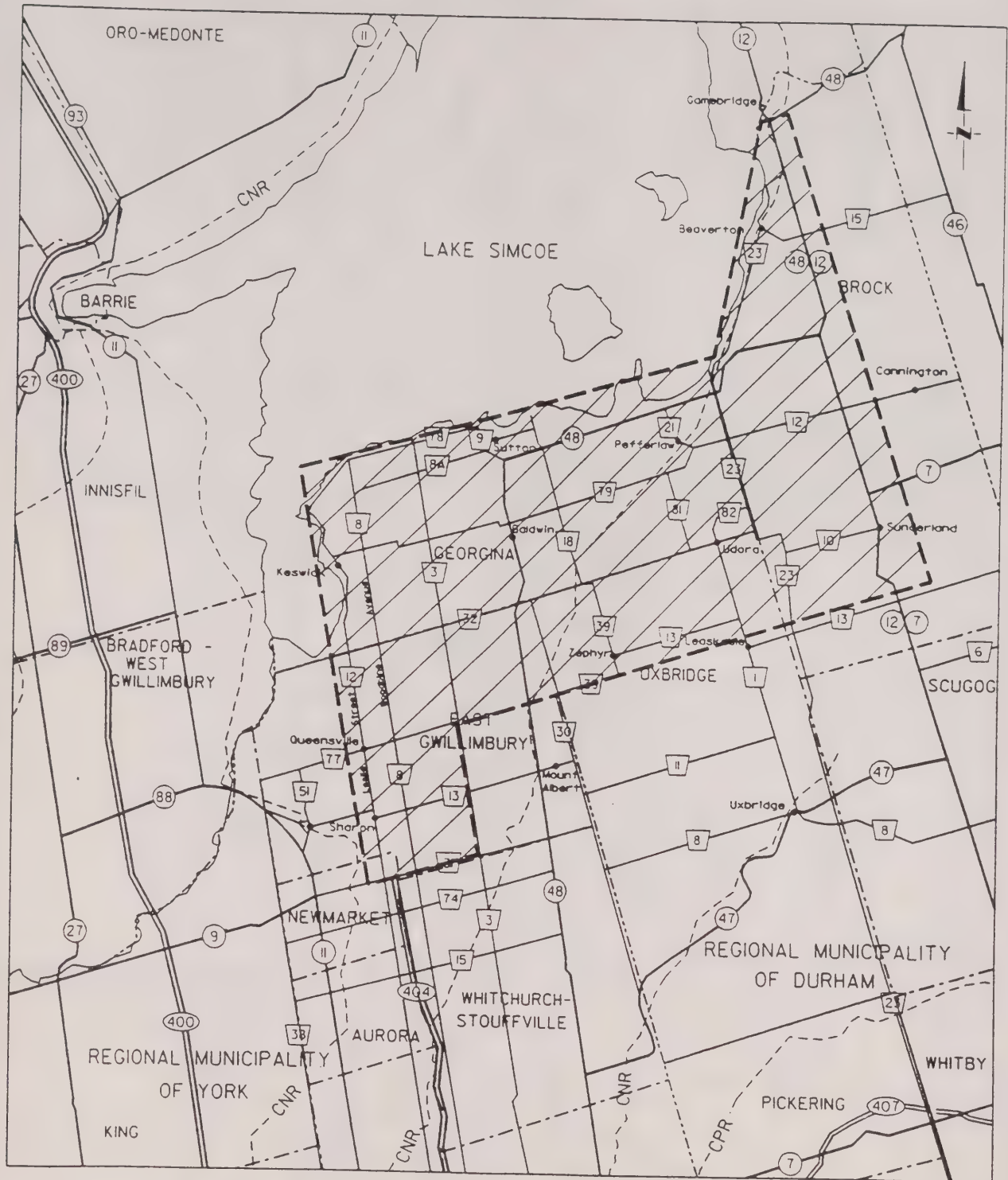
A number of route alignment alternatives were considered in order to select an optimum route. The assessment of the proposed route alternatives involved examination of several factors including the potential noise impact on the noise sensitive receptors.

The technique used for the noise assessment of the various route alternatives within this study is known as the percentage of highly annoyed. This assessment technique is a function of both the sound level and the size of the population experiencing a particular value or within a specific range of sound levels.

The preferred route was selected by the prime consultant. The final selection of the preferred route was based on a number of parameters, one of which was noise (not necessarily the main parameter for choosing the preferred route) associated with the proposed Highway 404 extension.

A number of receptors (87 receptors) have been selected along the preferred route. These receptors represent more or less the entire study area. Their selection was based on a number of parameters, which included different distances from the proposed Highway corridor, varying ambient sound levels, special topographical features that are likely to increase or decrease the sound levels, presence of additional acoustical shielding such as extensive vegetation, and different traffic volumes.

The excess sound levels associated with the preferred route above the F-D-N and the Government objective have been calculated.



STUDY AREA

FIGURE 1

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12

Route Planning Study and Environmental Assessment

The map displays the Township of Uxbridge, Ontario, and its surrounding municipalities. Key features include:

- Municipalities:** Town of Georgina, Town of East Gwillimbury, Regional Municipality of York, Regional Municipality of Durham, Township of Uxbridge, and Township of Brock.
- Roads:** Highway 7, Highway 10, Highway 15, and various local roads like Highway 3, Highway 18, Highway 23, and Highway 30.
- Geographical Features:** Lake Simcoe, Lake Huron, and the Otonabee River.
- Other Labels:** Port Bolster, Beaverton, Keswick, Queensville, Sharon, Mount Albert, and various numbered areas (e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50).
- Map Elements:** A north arrow in the upper left corner and a scale bar in the lower right corner.

STUDY AREA LIMIT



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12



Ministry of Transportation

一一一

TECHNICALLY PREFERRED ROUTE

LEGEND

STUDY AREA LIMIT

INTERCHANGE LOCATIONS

GRADE SEPARATION

ROAD CLOSING

AT GRADE INTERSECTION

RIGHT IN, RIGHT OUT INTERSECTION



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

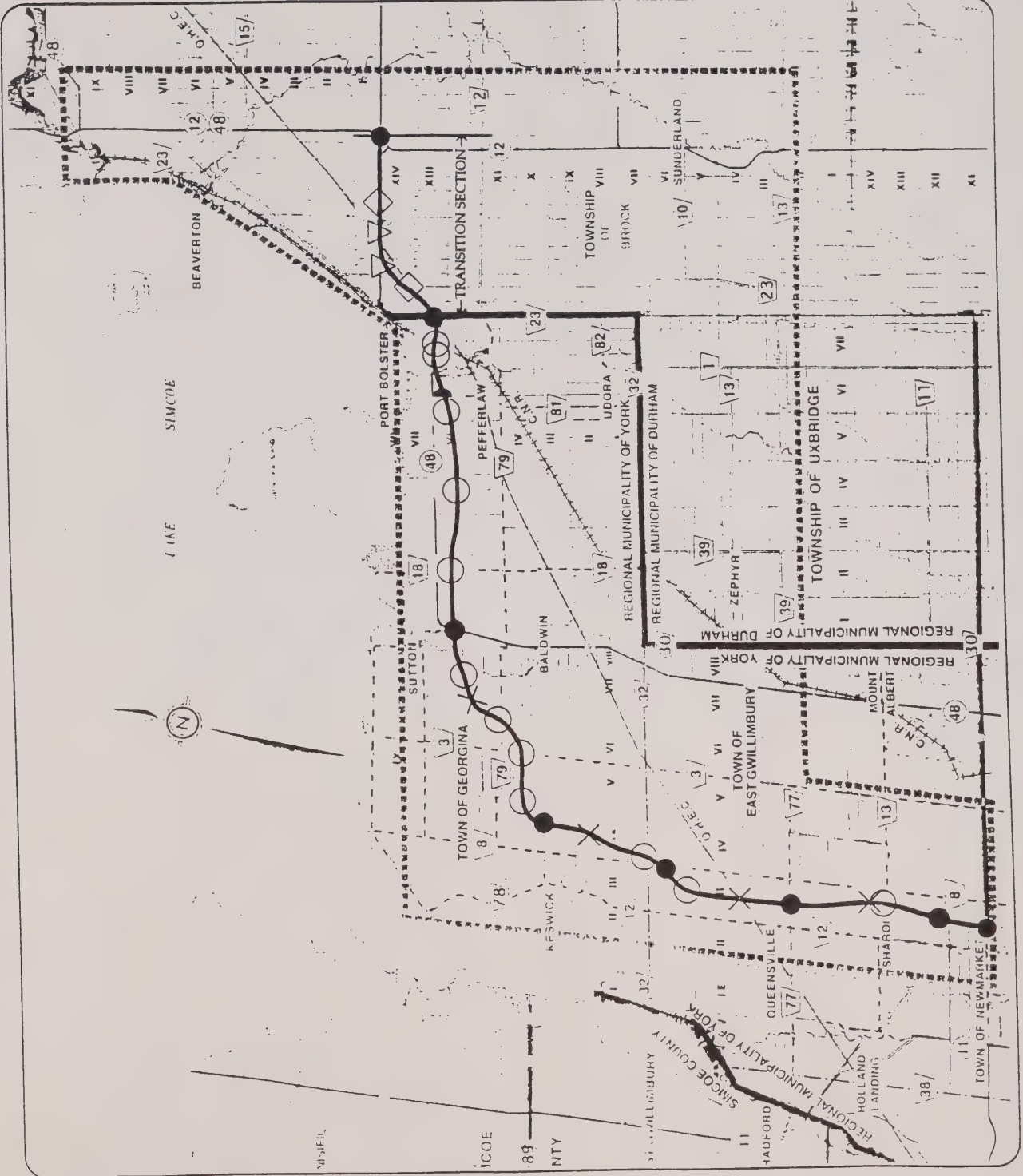
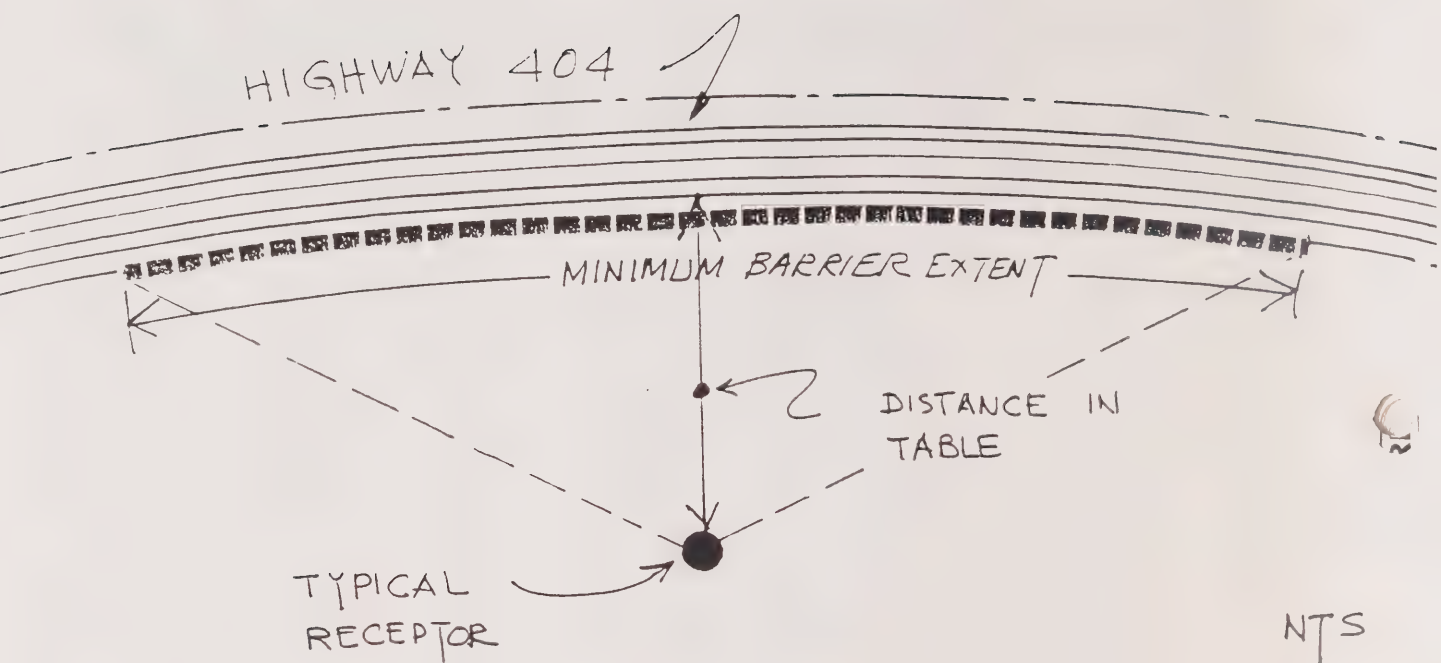


FIGURE 3



SKETCH SHOWING
RELEVANT DISTANCES

FIGURE 4

S.S. WILSON AND ASSOCIATES

Table 2.F, 4.F, 6.F, 8.F and 10.F in Appendix F provide a summary of FDN and Future sound levels, the impact above both the FDN and Leq 55 dBA objective, and indicate the selected receptor locations where mitigation is required or not. **Table 11.F** gives an overall summary of the total number of receptor locations impacted by the proposed undertaking as well as the opportunity for noise control measures.

It is important to note that while the impact prediction tables show “very significant” changes above the ambient, the fact remains that many of such levels are not acoustically significant above the 55 dBA objective.

In general, it is concluded that some of the residences will have very significant impact and some will have no or insignificant impact. Accordingly, some residences will require noise control measures.

4.2 RECOMMENDATIONS

1. Noise Control During Construction

In addition to the noise emitted by the operation of vehicles on the proposed undertaking, noise during the construction phase is an issue that should also be addressed.

Unlike operational noise, construction noise is temporary in nature depending on the type of work required and its location relative to the noise-sensitive receptors.

The significance of the construction noise impact depends on the number of pieces of equipment, their types, time of operation and their proximity to the receptors in question.

The following is a brief outline of the procedures to be followed by the MTO in handling construction noise during the Detail Design and Construction phases:

- a. Noise sensitive areas will be identified.
- b. Applicable local municipal noise control by-laws will be identified and obeyed. The by-laws include those enacted under the authority of the Municipal Act, the Environmental Protection Act or any other Provincial Legislation. Where timing constraints or any other provisions of the municipal by-law may cause hardship to the proponent, an explanation of this will be outlined in a submission to the MOEE and an exemption from such by-law will be sought directly from the area municipality in question.

- c. "General noise control measures" (not sound level criteria) will be referred to, or placed into the contract documents.
- d. Should the MTO receive any complaint from the public, the MTO staff will verify that the "general noise control measures" agreed to are in effect. The MTO will investigate any noise concerns, warn the contractor of any problems and enforce its contract.
- e. If the "general noise control measures" are complied with, but the public still complain about noise, the MTO will require the contractor to comply with the MOEE sound level criteria for construction equipment contained in the MOEE's Model Municipal Noise Control By-Law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.
- f. In selecting the appropriate construction noise control and mitigation measures, the MTO will give consideration to the technical, administrative, and economic feasibility of the various alternatives.
- g. While pile driving or blasting may be necessary in noise sensitive areas, monitoring will be determined and adopted by MTO policy pursuant to prevailing provincial legislation at the time of construction.

The above noted procedures are based on the construction noise provisions included in Section 8 of the MOEE/MTO Protocol.

2. Sound Barriers

Due to the fact that the noise impact on some of the receptor locations is higher than the maximum permissible by the MOEE/MTO criteria, therefore noise control measures have been investigated.

The most commonly used noise control measure is to construct sound barriers at appropriate location areas where large number of noise sensitive receptors are impacted and where noise control measures were warranted as per the MTO/MOEE Protocol such as Pollack Estates, Elm Grove, Green Acres and Summer Breeze Trailer Parks, to protect the outdoor living areas of the receptors of concern. The preferred location of the barrier is usually along the property limits of the Highway alignment to facilitate barrier maintenance by the Highway authority.

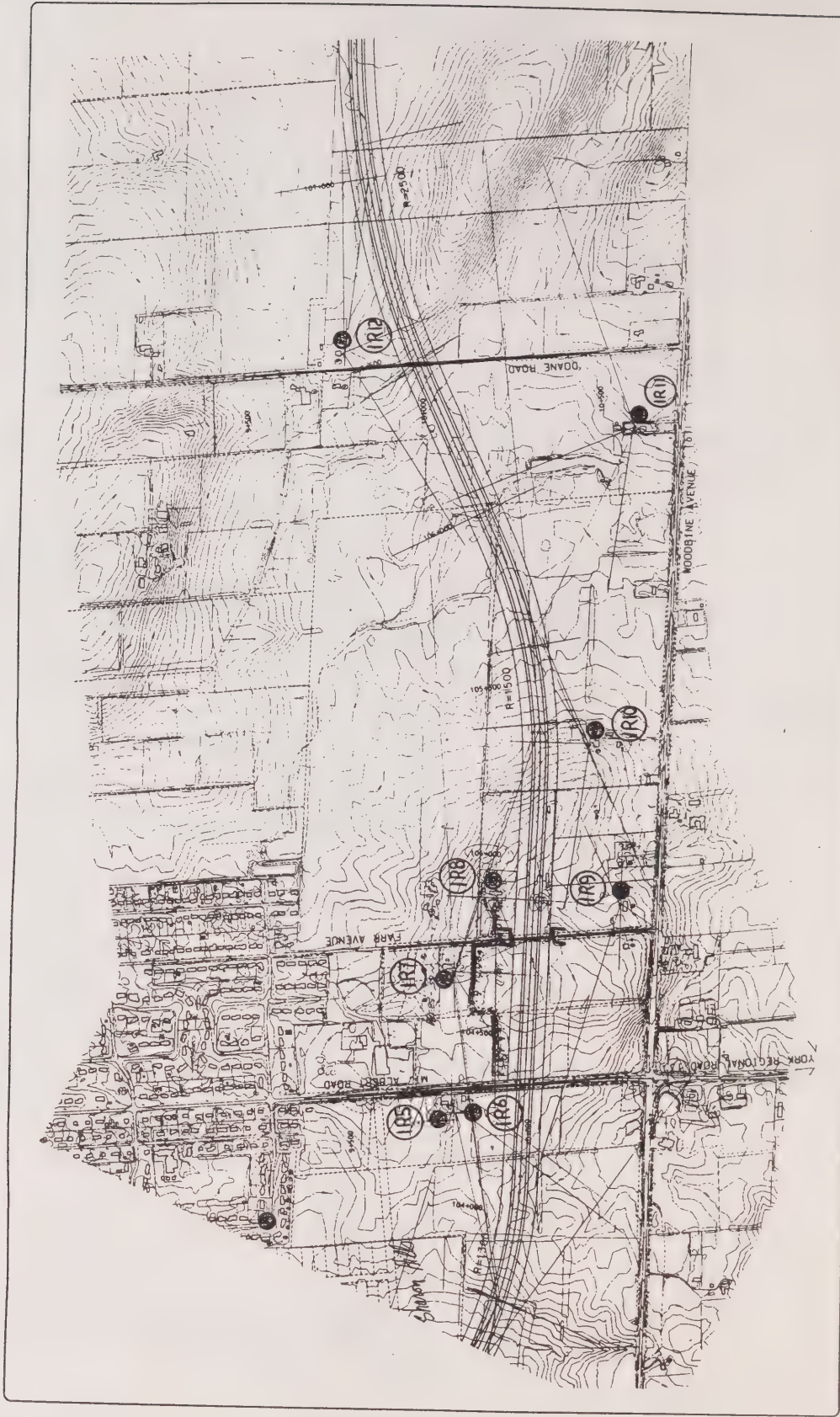
For a sound barrier to be considered by MTO, it should be cost effective, protect at least five receptors and achieve a minimum reduction of 5 dBA at the receptor locations. This reduction may or may not reduce the excess due to the proposed Highway 404 extension to the Government objective. **Table 2** shows typical minimum barrier extents as well as the approximate cost of constructing such barriers.

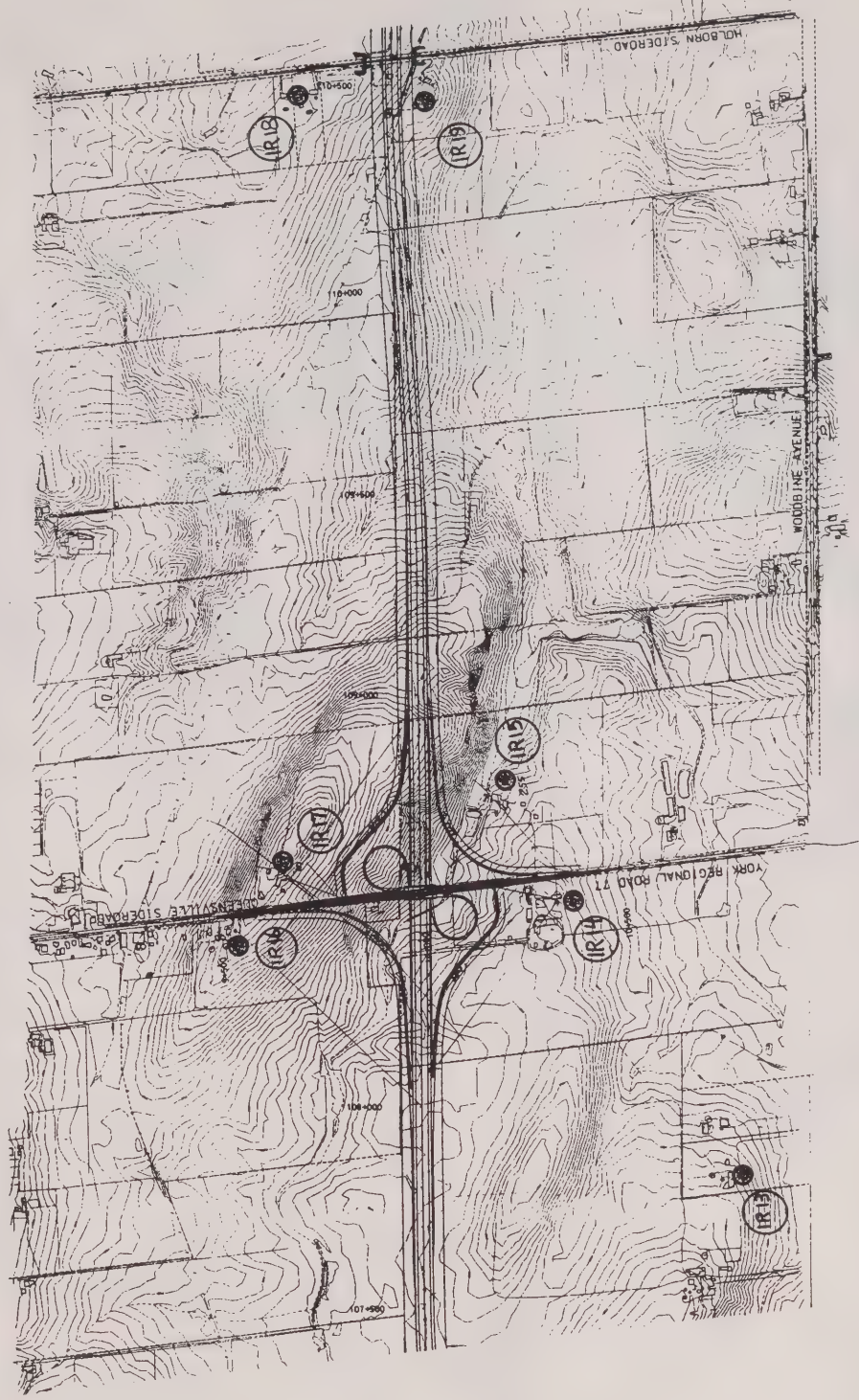
Given that the Technically Preferred Route has been developed only to a conceptual design level of detail the recommended noise mitigation strategy will be determined in subsequent phases of the project after approval of the EA. Typical mitigating measures include construction of berms and/or barriers, modification in the horizontal and vertical alignment of the facility, and/or the use of quieter pavements.

Further analysis should, therefore be undertaken during the detailed design stage of the proposed undertaking based on the MTO directives by taking into considerations the number of affected receptors , the acoustical effectiveness of the possible barriers and the cost effectiveness of the mitigation measures.

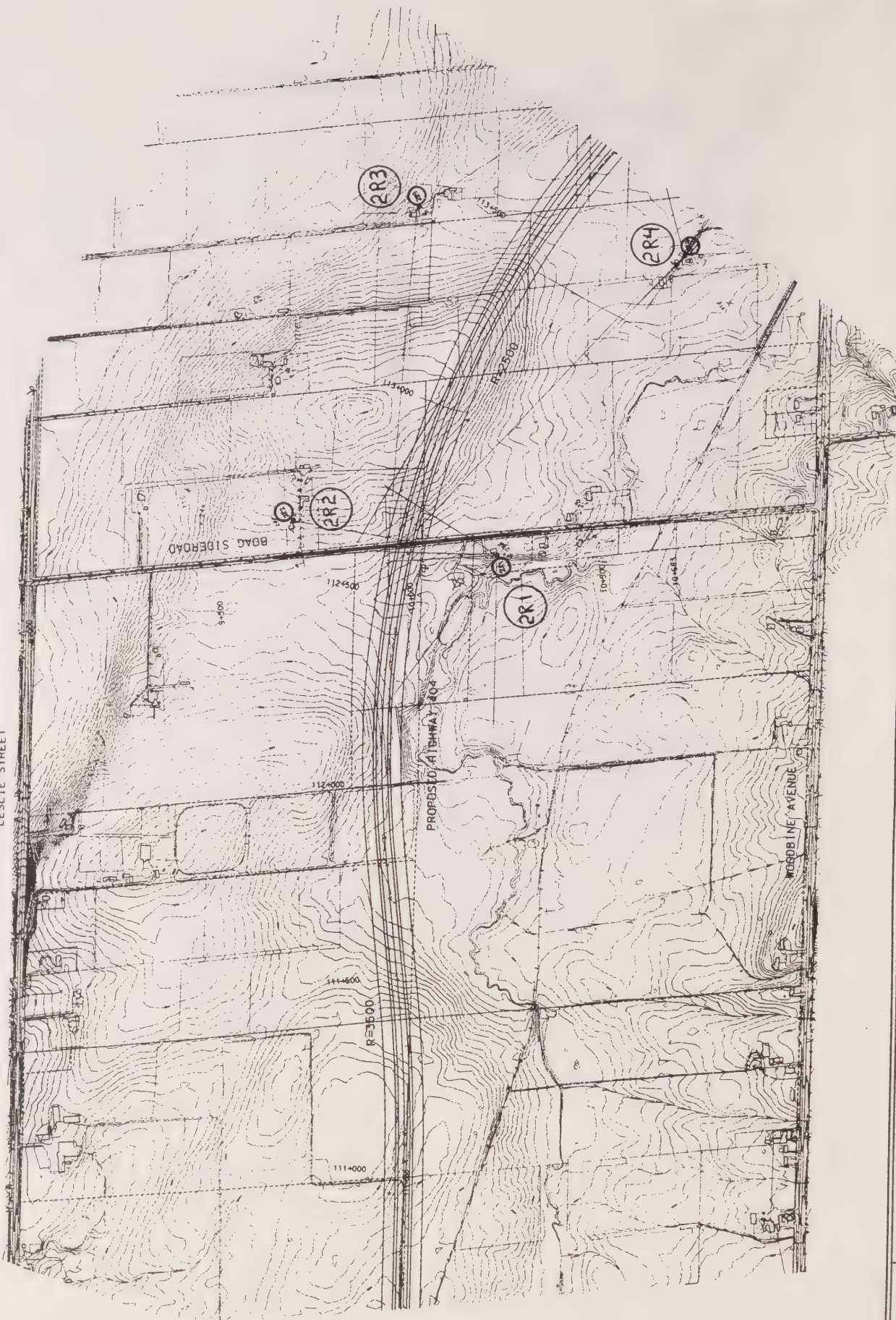
FIGURES AND PLATES

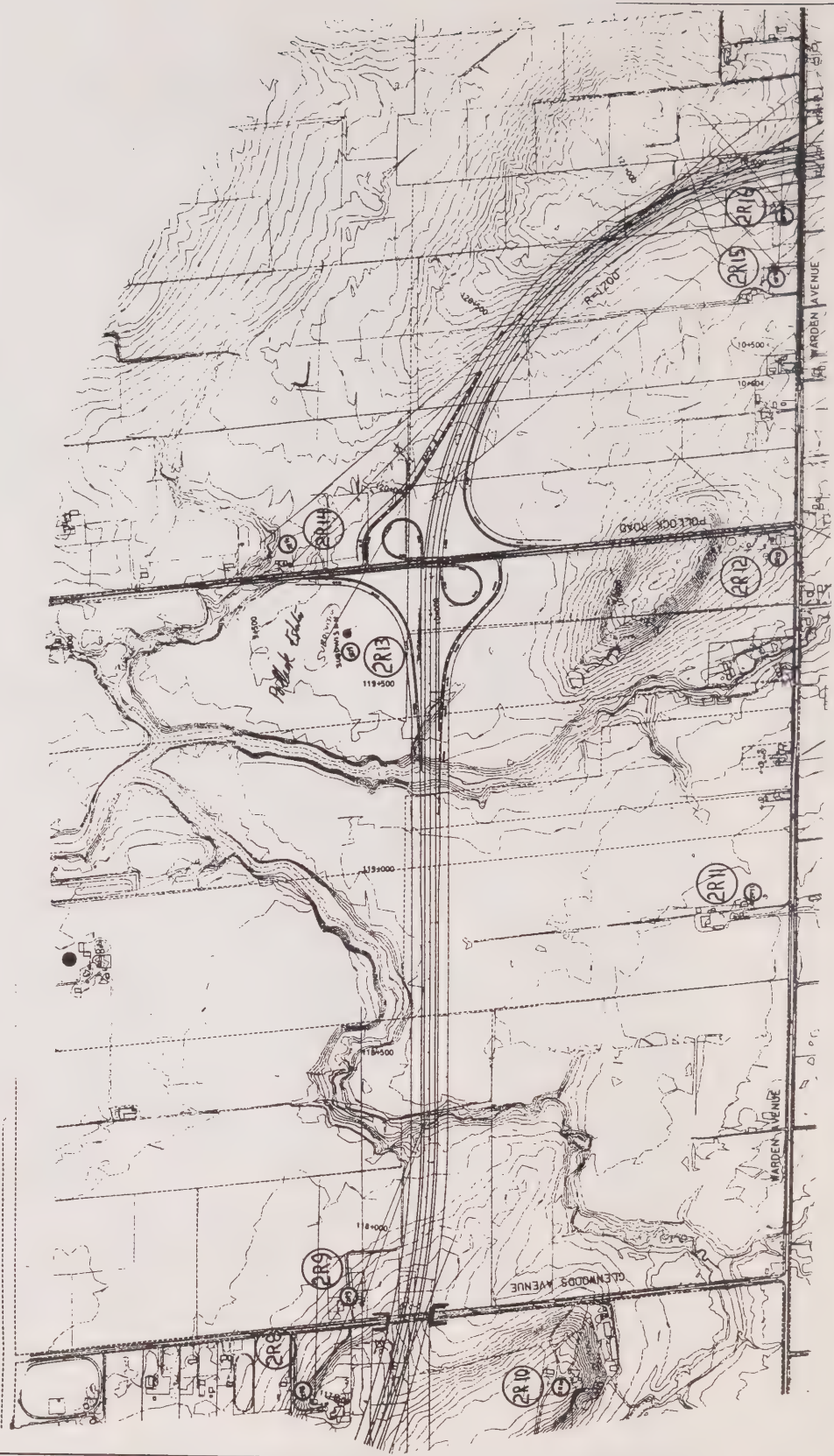


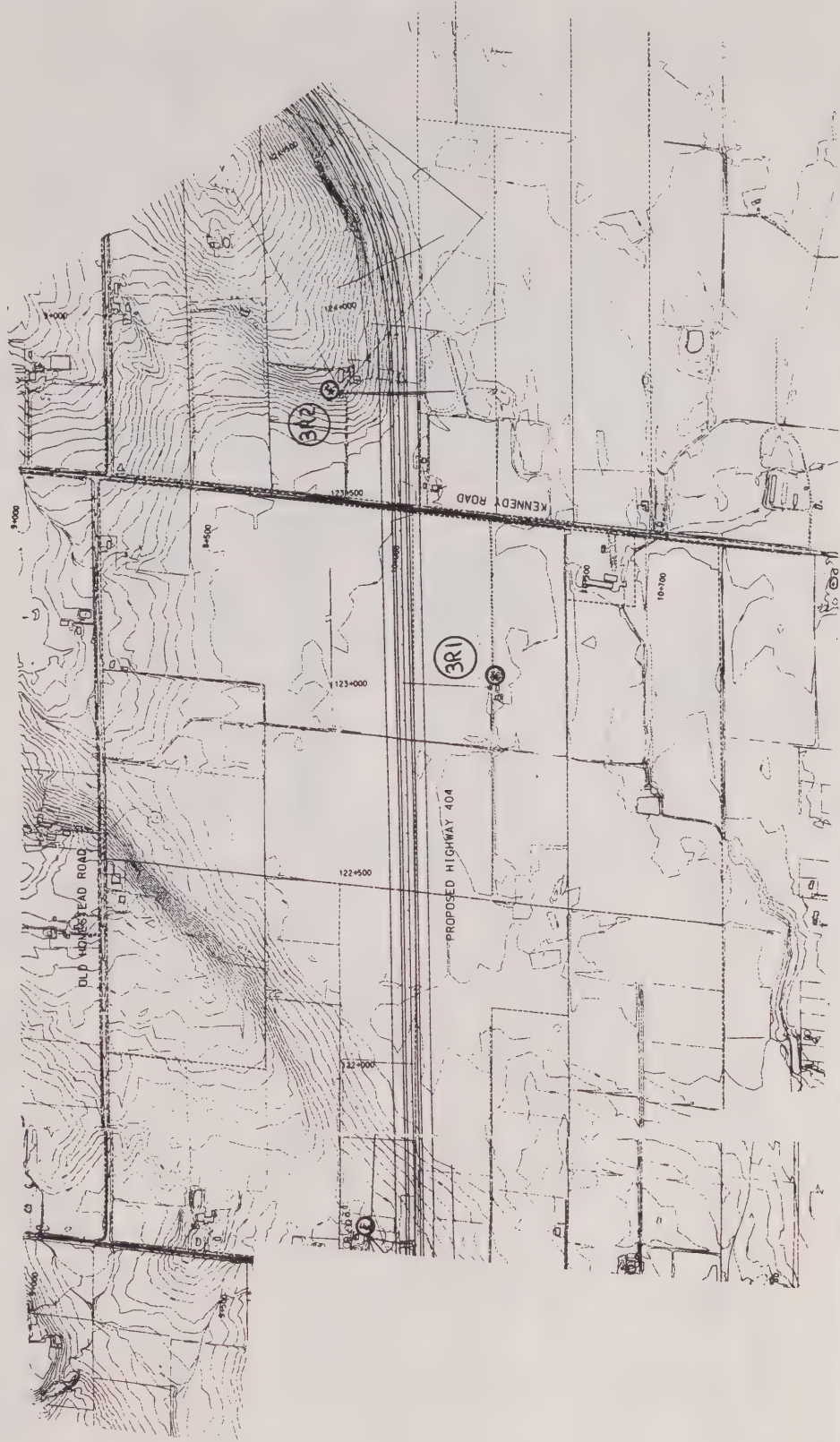


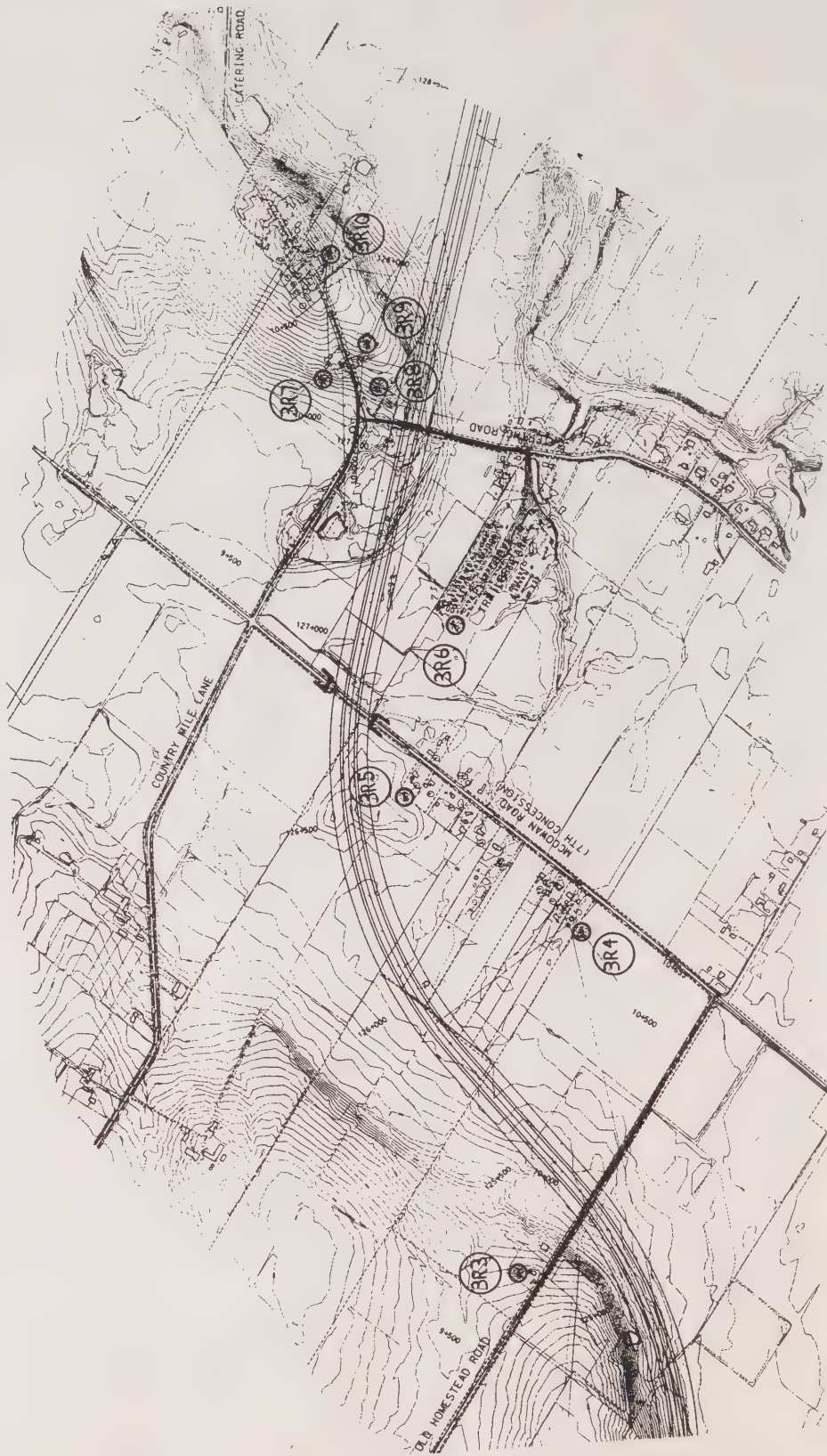


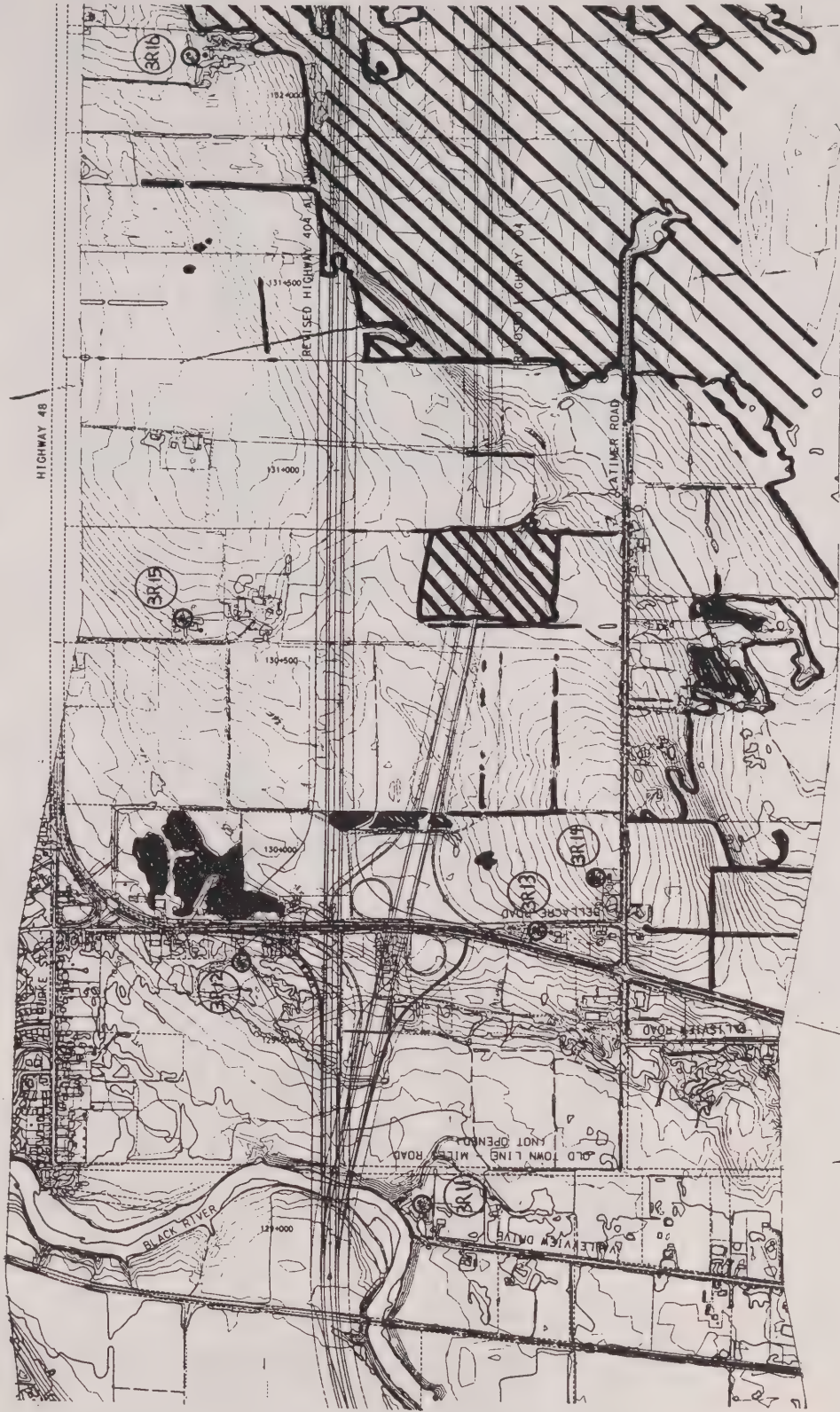
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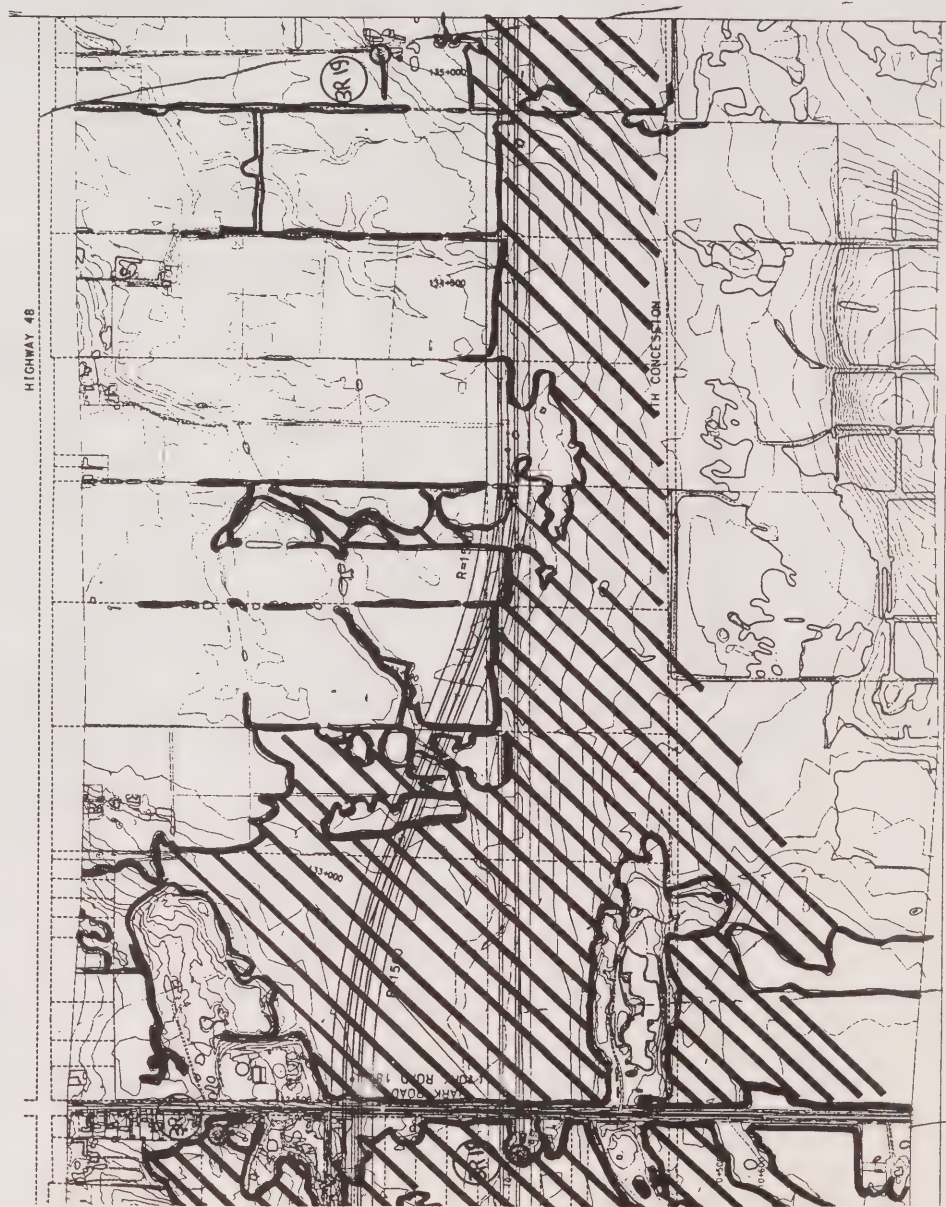




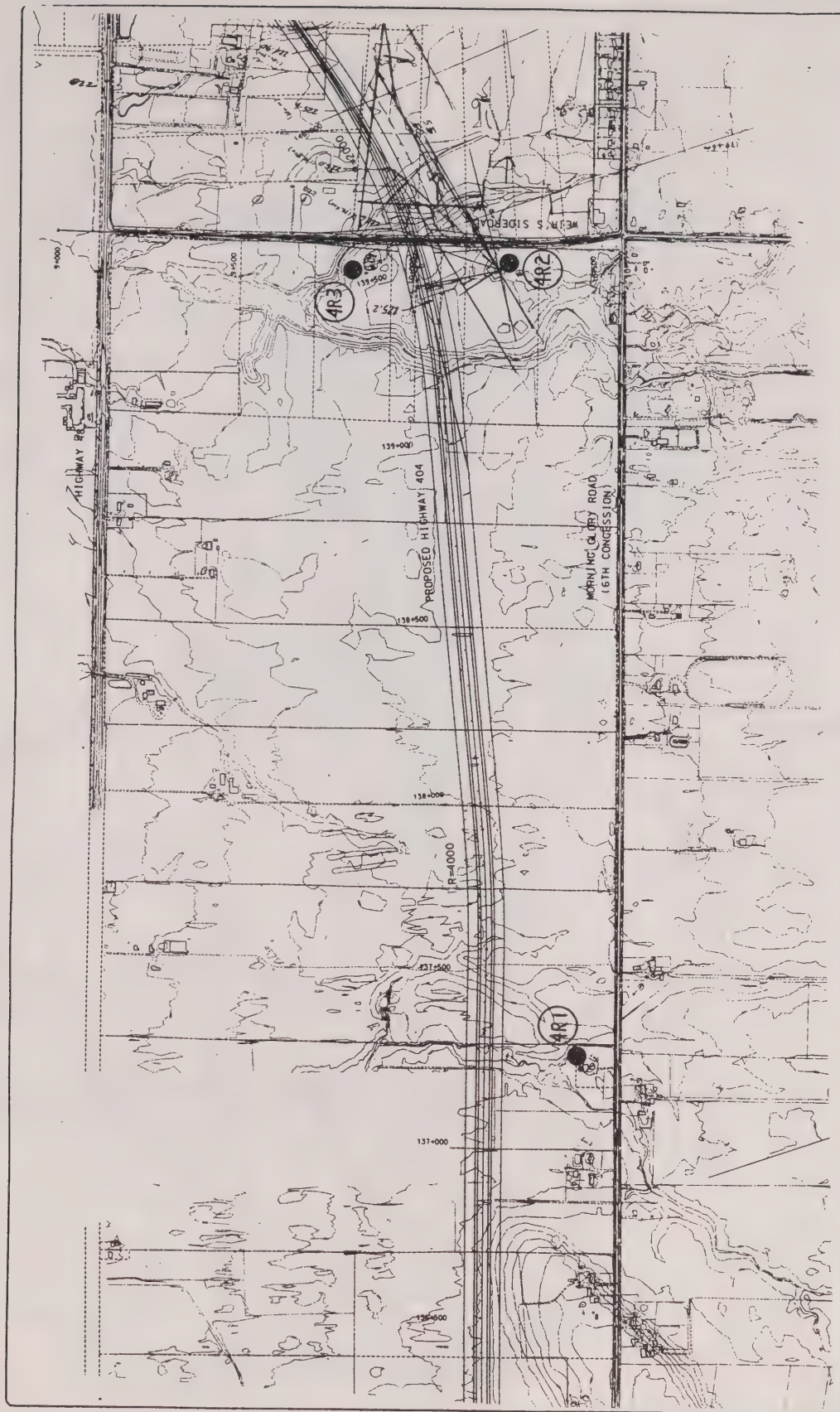


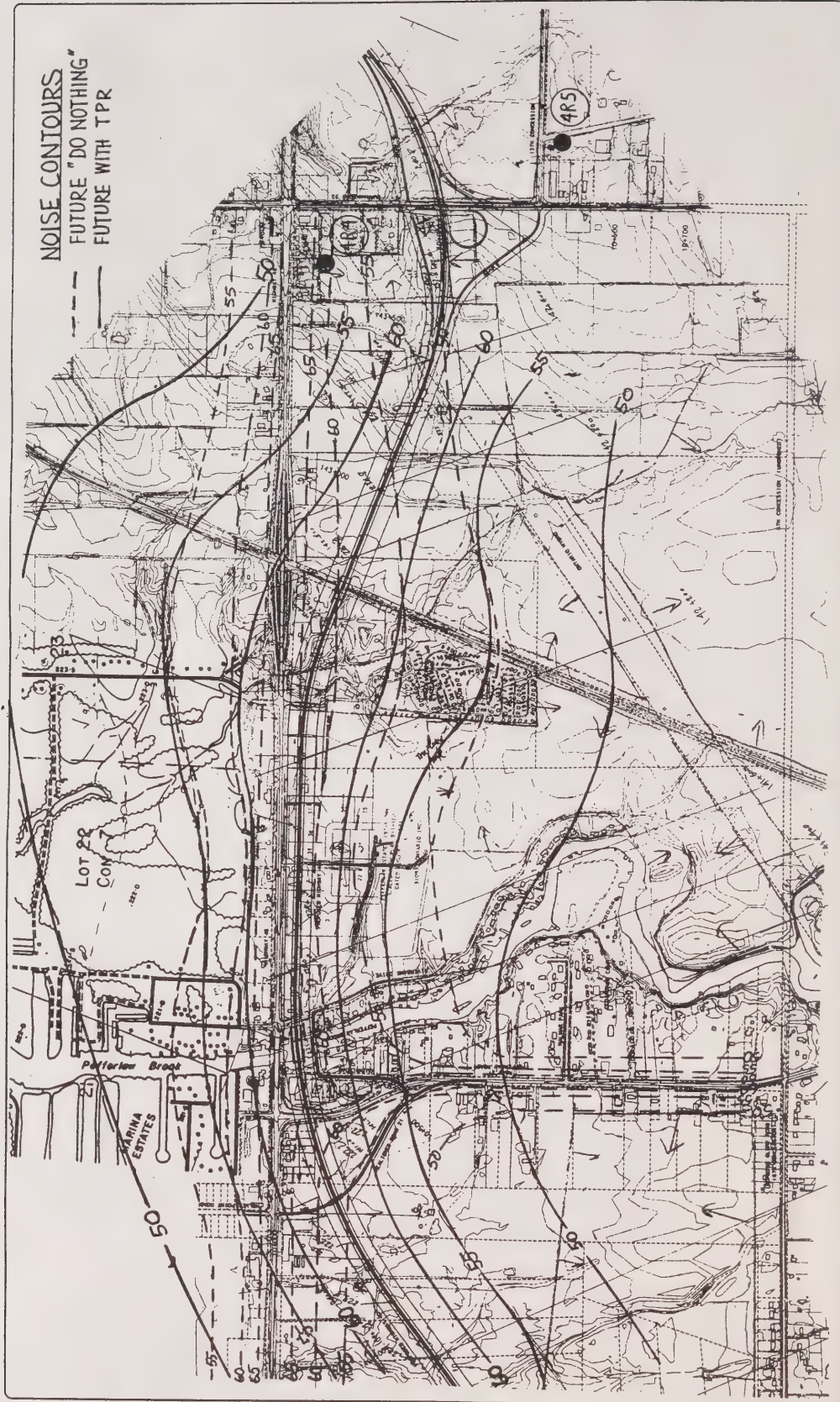




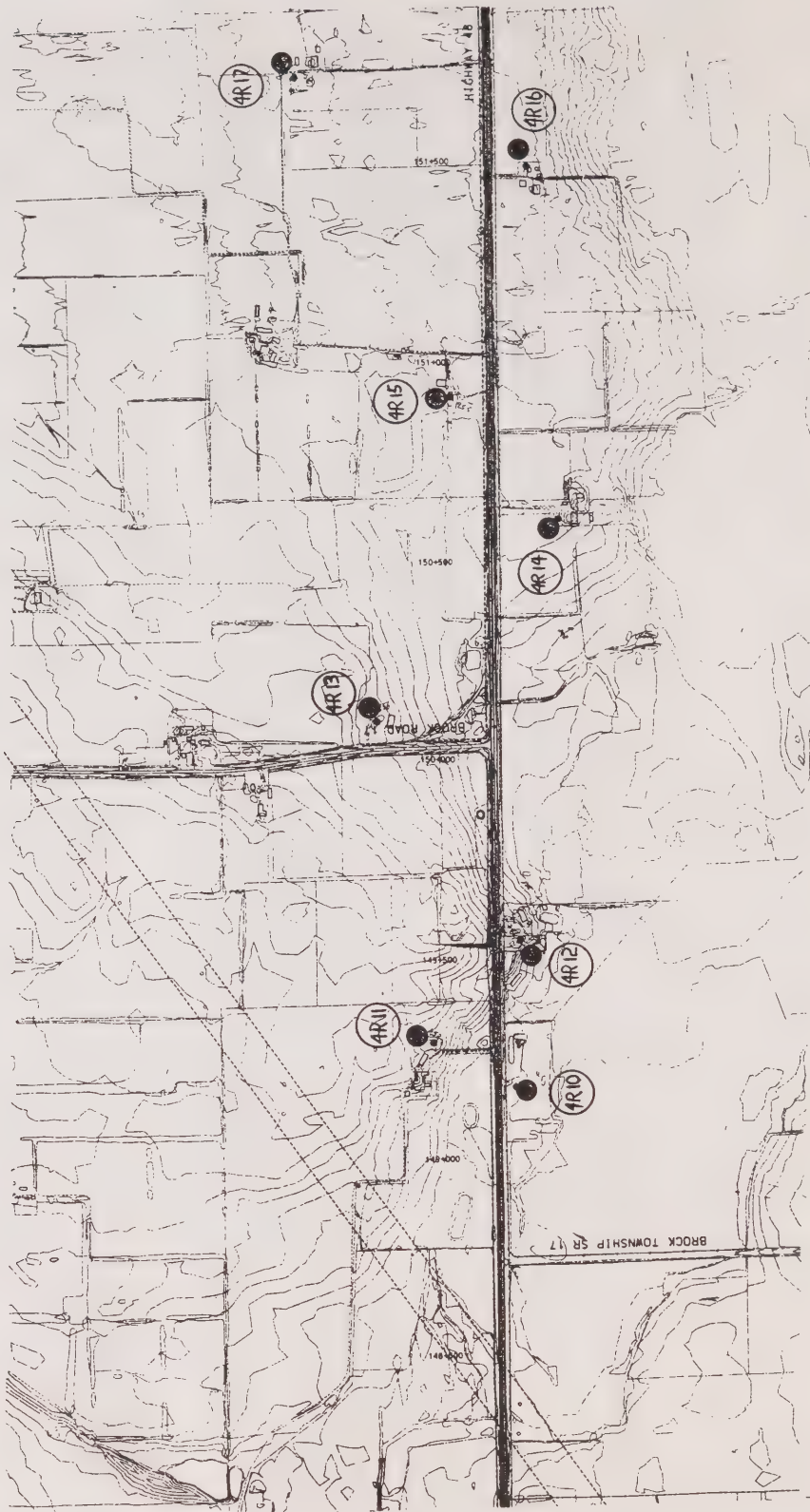


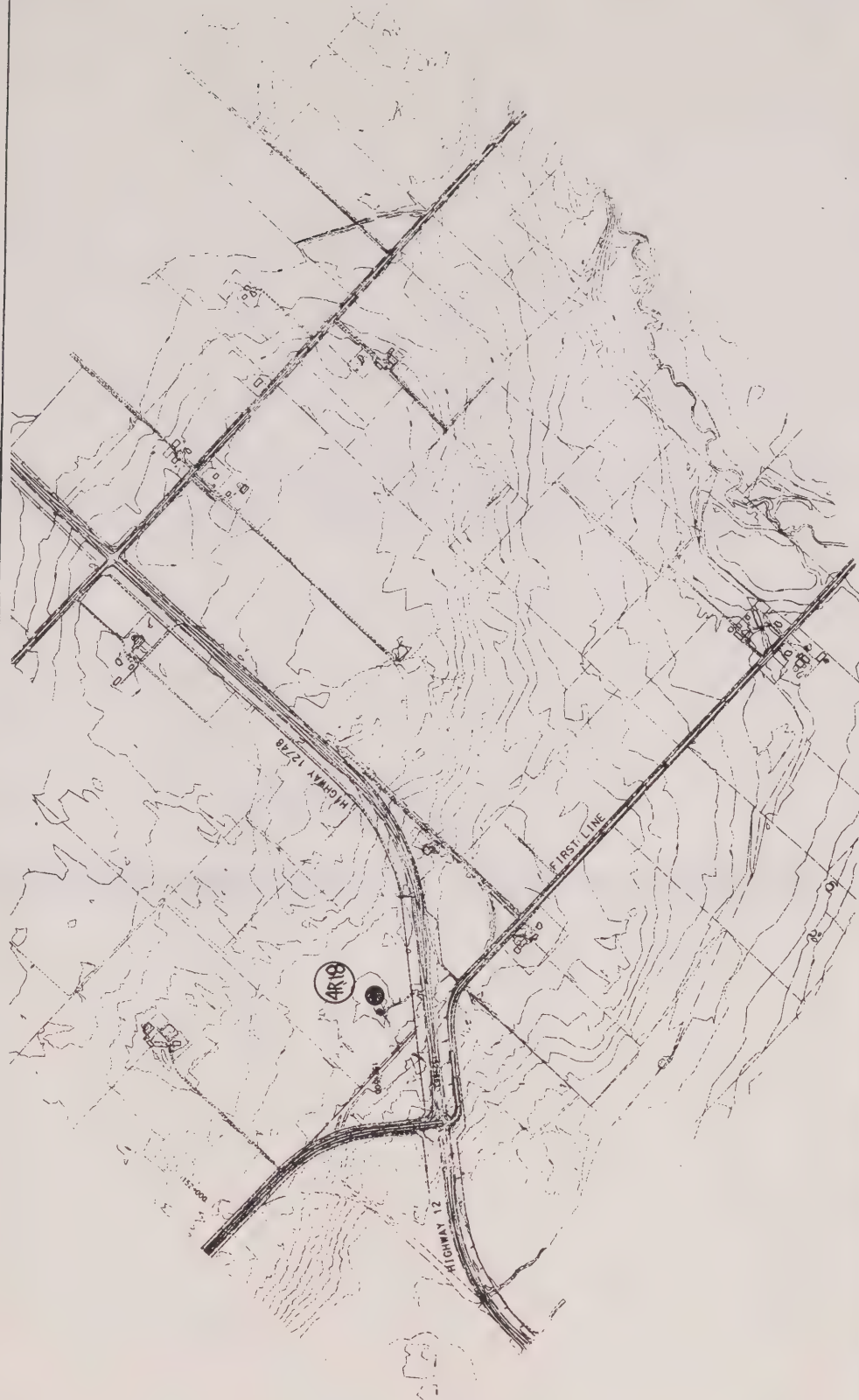
HIGHWAY 48











APPENDIX A

MOEE/MTO PROTOCOL FOR PROVINCIAL HIGHWAYS NOISE

A PROTOCOL FOR DEALING WITH NOISE CONCERNS DURING THE PREPARATION, REVIEW
AND EVALUATION OF PROVINCIAL HIGHWAYS ENVIRONMENTAL ASSESSMENTS.

This Protocol contains areas of policy agreement between the Ministries of Transportation and Communications, and Environment for dealing with noise concerns during the preparation, review and evaluation of environmental assessments for Provincial Highway undertakings.

As common understandings are resolved for any outstanding issues, these will be added to the Protocol by formal agreement.



D.P. Caplice
Assistant Deputy Minister
Operations Division
Ministry of Environment



J.R. Barr
Assistant Deputy Minister
Engineering and Construction
Ministry of Transportation
and Communications

FEBRUARY
1986

1. Retrofit The MTC policy for retrofit of existing freeways with sound barriers will remain in effect and unchanged.

2. Scope of Protocol

This protocol applies to the MTC Capital Construction Program for all classes of MTC Provincial roads, both urban and rural. The policy for each situation may require different noise control measures and further, that an assessment of the feasibility of providing noise control measures includes technical and economic considerations.

3. Definition of Noise Sensitive Areas

To be clearly defined, as guided by the One-Stage Procedural Guidelines and the specific definitions of "residential areas" and "quiet zones" found in the municipal noise control by-laws, approved by MOE under the Environmental Protection Act.

4. Establishing Existing and Future Noise Levels

Presently used prediction methodologies and measurement procedures are satisfactory. Any future changes, in noise prediction methodologies or measurement procedures, shall be compatible with those of both MOE and MTC.

Staff of MTC and MOE together shall set a standard for ambient noise levels in rural areas where predictions cannot be done.

5. Impact Assessment

Noise impacts for all MTC Provincial roads will be predicted based on traffic projections ten years after completion, or best available data when 10-year projections are not available.

The study area shall be defined using the smaller of one of the two following methods; using 5 decibel contour lines extending from the source to the point where there is no increase above the ambient level, or a distance of 600 m from the source.

The noise impact on noise-sensitive land uses will be determined for outdoor spaces.

All reference to 65 dBA as a "target" and 70 dBA as a "maximum" will be removed from MTC directives A-1 and B-94. Further, reference to a 70 dBA maximum should be removed from the Provincial Policy. The objective for outdoor sound levels is the higher of the Leq 55 dBA or the existing ambient. The significance of a noise impact will be quantified by using this objective in addition to the change in noise level above the ambient.

Mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically, and administratively feasible.

6. Noise Control Measures

The attached Table summarizes the degree of mitigation effort to be applied for various noise level increases.

On right-of-way mitigation measures will be identified, considered and implemented where warranted.

Mitigation measures within the right-of-way include: barriers, berms, vertical and horizontal alignments, pavement surfaces, etc.

Where noise increases above the ambient do not exceed 5 dBA no mitigation is required.

Where noise increases above the ambient exceed 5 dBA MTC will:

- Investigate noise control measures within the right-of-way
- If project costs are not significantly affected and where averaged over first row receivers, a minimum attenuation of 5 dBA can be achieved, MTC will introduce the selected measures within the right-of-way.

Where a freeway is to be expanded through an existing residential area that has been included on the retrofit priority list, noise attenuation measures should be considered as part of the freeway expansion project when the MTC policy for Retrofit of Existing Freeways can be satisfied.

7. Documentation

MTC will increase its E.A. documentation with respect to the feasibility of all potential mitigation measures within the right-of-way. The feasibility of each measure would be evaluated by such factors as effectiveness and technical and economic feasibility.

8. Construction Noise

The following is a brief outline of the procedures to be followed in handling construction noise during the Environmental Assessment process and during the construction phase. Commitment to the following shall be made in all E.A. Documents:

- (a) Noise sensitive areas will be identified;
- (b) Applicable municipal noise control by-laws will be identified and obeyed. Where timing constraints, or any other municipal by-law may cause hardship to MTC, an explanation of this will be outlined in the EA document, and an exemption from such by-law will be sought directly from the municipality in question.

- (c) General noise control measures (not sound level criteria) will be referred to, or placed into MTC contract documents;
- (d) Any initial complaint from the public will require verification by MTC that the general noise control measures agreed to are in effect; MTC will investigate any noise concerns, warn the contractor of any problems, and enforce its contract;
- (e) Notwithstanding compliance with the "general noise control measures", a persistent complaint will require a contractor to comply with MOE sound level criteria for construction equipment contained in the MOE Model Municipal Noise Control By-Law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available; and
- (f) In selecting the appropriate construction noise control and mitigation measures, MTC will give consideration to the technical, administrative, and economic feasibility of the various alternatives.

9. Miscellaneous

- (a) All future technical documents referred to in this agreement and prepared to become part of the Protocol shall be jointly approved by MOE and MTC. These include:
 - o ambient levels in Rural Areas where predictions cannot be done;
 - o general construction noise control measures; and
 - o any other alterations to this Protocol.
- (b) As the intent of this Protocol will be followed during their preparation, joint MOE/MTC approval is not required for MOE or MTC procedural/operational documents such as:
 - o internal directives;
 - o contract documents; and
 - o E.A. procedural/technical guidelines.

TABLE 1: SUMMARY OF MITIGATION EFFORT

CHANGE IN NOISE LEVEL ABOVE AMBIENT	MITIGATION EFFORT
<p>0 - 5 dBA</p> <p>> 5 dBA</p>	<ul style="list-style-type: none"> - None - Investigate noise control measures on R.O.W. - If project cost is not significantly affected introduce noise control measure within R.O.W. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers. - Mitigate to ambient, as administratively, economically, and technically feasible.

APPENDIX B

TRAFFIC NOISE PREDICTION MODEL

GENERAL PROCEDURES AND ADJUSTMENTS

1.1 MOEE ROAD TRAFFIC NOISE PREDICTION TECHNIQUE

The road traffic noise assessment method is based on a model originally developed by the U.S. Federal Highway Administration in 1978 as modified by the Ontario Ministry of the Environment and Energy (MOEE) to suit the provincial requirements.

The analytical model predicts hourly Leq due to road traffic. It is modular in structure and thereby lends itself to applications requiring detailed analysis.

The variables required for the road traffic assessment include the following: road traffic volume per hour, percentages of automobiles, medium trucks and heavy trucks, average speed of traffic flow, roadway gradient, source to receiver distance(s), type of ground cover, road element size and shielding applicable.

The details of the model could be found in the publication "Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)¹", Ministry of the Environment, October 1989.

The applicable procedures are summarized in the following paragraphs. Sample calculations are included in this report for a typical receiver location.

- 1.1.1. Predicted sound level data are generally based on two daily periods or the full 24 hour period as requested by the MOEE for specific sources:

07:00 to 23:00 hours

23:00 to 07:00 hours

- 1.1.2. Roadway traffic volumes (AADT) split:

Regional Roads

07:00 to 23:00 hours = 91%

23:00 to 07:00 hours = 9%

Provincial Highways

07:00 to 23:00 hours = 85%

23:00 to 07:00 hours = 15%

- 1.1.3. Reference Hour Sound Level:

$$Leq_{ref} = 10 \log \sum_{i=1}^3 \{ K_g P_i 10^{\frac{(L_0)_i}{10}} \} - 10 \log S + 2.76 \quad 1$$

$$(L_0)_{AUTOMOBILE} = 38.1 \log(S) - 2.42$$

$$(L_0)_{MEDIUM TRUCK} = 33.9 \log(S) + 16.43$$

$$(L_0)_{HEAVY TRUCK} = 24.6 \log(S) + 38.5$$

¹The computerized version of this model is 'STAMSON 5.03'.

- 4where Leq_{ref} the reference hourly sound level;
 K_g the road gradient adjustment factor for heavy trucks;
 P_i the percentage of i^{th} vehicle class, expressed as fraction of the total volume;
 $(L_0)_i$ the reference energy mean emission level of i^{th} vehicle class;
 S the posted speed limit in km/h.

1.1.4. Adjustments to Reference Level (dB)

- Traffic Volume:

$$\text{Adjustment} = 10 \log (V/V_{ref}) = 10 \log (V/40)$$

where V is the total traffic volume.

- Distance:

$$\text{Adjustment} = 10 \log (D_{ref}/D)^{1+\alpha}$$

where D_{ref} is reference distance of 15 m.
 α is ground absorption coefficient.

$$\alpha = 0 \text{ for reflective surfaces (hard ground)}$$

$$\alpha = 0.66 \text{ for absorptive surfaces (soft ground)}$$

where $h_{eff} \leq 3 \text{ m}$

$$\alpha = 0.75(1-(h_{eff}/25)) \text{ for absorptive surfaces}$$

where $3 < h_{eff} \leq 25 \text{ m}$

$$\alpha = 0 \text{ for absorptive surfaces}$$

where $h_{eff} > 25 \text{ m}$

$$h_{eff} = s + p + t + r$$

where h_{eff} is the total effective height.

- Road Segment

Non-Reflective Surface :

$$\text{Adjustment} = 10 \log \left\{ \frac{1}{\pi} \int_{\Phi_1}^{\Phi_2} \cos^{\alpha} \Phi \, d\Phi \right\} \quad 5$$

Reflective Surface :

$$\text{Adjustment} = 10 \log \left\{ \frac{\Phi_2 - \Phi_1}{\pi} \right\} \quad 6$$

where f_1 is the negative angle of view;
 f_2 is the positive angle of view.

1.1.5. Typical Receiver and Source Heights:

Outdoor Living Areas (OLA) = 1.5 m

Second Storey Bedroom = 4.5 m

Source Height = 0.5 m where $P_{HT} < 0.01$

Source Height = $\sqrt[3]{100 P_{HT}}$ where $0.01 \leq P_{HT} \leq 0.30$

Source Height = 2.4 m where $P_{HT} > 0.30$

where P_{HT} is the percentage of heavy trucks, unadjusted by the gradient factor, expressed as a fraction of the total volume.

1.2 BARRIER CALCULATION MODEL

1.2.1. Barrier attenuation is calculated using optical diffraction theory.

1.2.2. Attenuation for road traffic noise is calculated at 500 Hz for an incoherent infinite line source.

1.2.3. The barrier prediction model is based on the following:

$$\text{Barrier Attenuation} = 0 \text{ dB}, \quad \text{for } (N_0)_i \cos \phi \leq -0.1916$$

$$\text{Barrier Attenuation} = 10 \log \left\{ \frac{1}{\Phi_2 - \Phi_1} \int_{\Phi_1}^{\Phi_2} \frac{\tan^2 \sqrt{2\pi |N_0|_i \cos \phi}}{\sqrt{10} 2\pi |N_0|_i \cos \phi} d\Phi \right\},$$

for $-0.1916 \leq (N_0)_i \cos \phi \leq 0$

$$\text{Barrier Attenuation} = 10 \log \left\{ \frac{1}{\Phi_2 - \Phi_1} \int_{\Phi_1}^{\Phi_2} \frac{\tanh^2 \sqrt{2\pi (N_0)_i \cos \phi}}{\sqrt{10} 2\pi (N_0)_i \cos \phi} d\Phi \right\},$$

for $0 \leq (N_0)_i \cos \phi \leq 5.03$

$$\text{Barrier Attenuation} = 20 \text{ dBA} \quad \text{for } (N_0)_i \cos \phi \geq 5.03$$

where N_0 is Fresnel Number, $N_0 = 2.915 \times (\text{P.L.D.})$

APPENDIX C
ROADWAY TRAFFIC DATA

C.1 TRAFFIC DATA FOR ALTERNATIVE ROUTES

JURISDICTION	NUMBER/NAME	BASE CASE							
		Section			Posted Speed	% Trucks		1991	
		Number	From	To		Medium	Heavy	AADT	SAOT
MTO	Hwy 404	1	Davis Dr	Green Lane	100	2%	4%	n/a	n/a
MTO	Hwy 404	2	Green Lane	YR 13	100	2%	4%	n/a	n/a
MTO	Hwy 404	3	YR 13	YR 77	100	2%	4%	n/a	n/a
MTO	Hwy 11	4	York Bndry	Bathurst St	80	3%	3%	23200	25500
MTO	Hwy 11	5	Bathurst St	Holland Landing	80	3%	3%	15700	19700
MTO	Hwy 11	6	Holland Landing	Hwy 9/Davis Dr	80	3%	3%	26800	28400
MTO	Hwy 12	7	Hwy 48	Hwy 7	80	2%	2%	5500	6800
MTO	Hwy 7/12	8	Hwy 7	DR 10	80	2%	2%	7900	9800
MTO	Hwy 7/12	9	DR 10	DR 6	80	2%	2%	5600	7000
MTO	Hwy 12/48	10	DR 15	Hwy 48	80	5%	10%	8200	14400
MTO	Hwy 12/48	11	DR 23	DR 15	80	5%	10%	8900	15600
MTO	Hwy 48	12	Hwy 12/48	York Bndry	80	5%	10%	4600	8000
MTO	Hwy 48	13	York Bndry	YR 18	80	5%	10%	10600	13300
MTO	Hwy 48	14	YR 18	YR 9	80	5%	10%	9900	12400
MTO	Hwy 48	15	YR 9	YR 32	80	3%	5%	9400	11800
MTO	Hwy 48	16	YR 32	YR 13	80	3%	5%	9500	11900
MTO	Hwy 48	17	YR 13	YR 31	80	3%	5%	9900	12100
York Region	YR 12	18	YR 78	YR 32	50	2%	2%	11600	14500
York Region	YR 12	19	YR 32	YR 77	80	2%	2%	9100	11400
York Region	YR 12	20	YR 77	YR 13	80	2%	2%	7900	9900
York Region	YR 12	21	YR 13	Green Lane	80	2%	2%	12600	15800
York Region	YR 8	22	Green Lane	YR 31	70	2%	2%	16500	20600
York Region	YR 8	23	YR 78	YR 8A	80	2%	2%	1800	2300
York Region	YR 8	24	YR 8A	YR 79	80	2%	2%	7000	8800
York Region	YR 8	25	YR 79	YR 32	70	2%	2%	10600	13300
York Region	YR 8	26	YR 32	YR 77	80	2%	2%	11100	13900
York Region	YR 8	27	YR 77	YR 13	80	2%	2%	11200	14000
York Region	YR 8	28	YR 13	YR 31	80	2%	2%	12400	15500
York Region	YR 78	29	YR 9	YR 3	80	2%	2%	2500	3100
York Region	YR 78	30	YR 3	YR 8	80	2%	2%	2200	2800
York Region	YR 78	31	YR 8	YR 79	70	2%	2%	8000	10000
York Region	YR 78	32	YR 79	YR 12	60	2%	2%	5200	6500
York Region	YR 3	33	YR 78	YR 8A	80	2%	2%	1300	1600
York Region	YR 3	34	YR 8A	YR 79	80	2%	2%	300	400
York Region	YR 3	35	YR 79	YR 32	80	2%	2%	300	400
York Region	YR 3	36	YR 32	YR 13	80	2%	2%	600	800
York Region	YR 3	37	YR 13	YR 31	80	2%	2%	300	400
York Region	YR 80	38	YR 9	YR 18	80	2%	2%	3900	4900
York Region	YR 18	39	YR 80	Hwy 48	80	2%	2%	3600	4500
York Region	YR 18	40	Hwy 48	YR 79	80	2%	2%	1100	1400
York Region	YR 18	41	YR 79	YR 32	80	2%	2%	800	1000
York Region	YR 82	42	DR 23	DR 1	80	2%	2%	2300	2900
York Region	YR 8A	43	YR 9	YR 3	80	2%	2%	6100	7600
York Region	YR 8A	44	YR 3	YR 8	80	2%	2%	5300	6600
York Region	YR 9	45	Hwy 48	YR 8A	50	2%	2%	9600	12000
York Region	YR 9	46	YR 8A	YR 78	50	2%	2%	9800	12300
York Region	YR 32	47	YR 18	Hwy 48	80	2%	2%	1200	1500
York Region	YR 32	48	Hwy 48	YR 3	80	2%	2%	3100	3900
York Region	YR 32	49	YR 3	YR 8	80	2%	2%	3800	4800
York Region	YR 32	50	YR 8	YR 12	80	2%	2%	3000	3800
York Region	YR 77	51	YR 8	YR 12	80	2%	2%	2100	2600
York Region	YR 77	52	YR 12	Bathurst	80	2%	2%	6500	8100
York Region	YR 13	53	DR 30	Hwy 48	80	2%	2%	3900	4900
York Region	YR 13	54	Hwy 48	YR 3	80	2%	2%	3600	4500
York Region	YR 13	55	YR 3	YR 8	80	2%	2%	4000	5000
York Region	YR 13	56	YR 8	YR 12	80	2%	2%	5400	6800
York Region	YR 13	57	YR 12	YR 51	80	2%	2%	9400	11800
York Region	YR 31	58	DR 30	Hwy 48	80	2%	2%	3800	4800
York Region	YR 31	59	Hwy 48	YR 3	80	2%	2%	9900	12400
York Region	YR 31	60	YR 3	YR 8	80	2%	2%	11900	14900
York Region	YR 31	61	YR 8	YR 12	80	2%	2%	22400	28000
York Region	YR 31	62	YR 12	Hwy 11	80	2%	2%	24600	30800
York Region	YR 51	63	YR 77	Holland Landing	60	2%	2%	5200	6500
Durham Region	DR 30	64	DR 39	YR 13	80	2%	2%	2800	3300
Durham Region	DR 30	65	YR 13	DR11	80	2%	2%	2600	3300
Durham Region	DR 30	66	DR 11	YR 31	80	2%	2%	2400	3000
Durham Region	DR 39	67	York Bndr	DR 13	80	2%	2%	500	600
Durham Region	DR 39	68	DR 13	DR 30	80	2%	2%	1900	2400
Durham Region	DR 13	69	Hwy 7/12	DR 23	80	2%	2%	1800	2300
Durham Region	DR 13	70	DR 23	DR 1	80	2%	2%	3300	4100
Durham Region	DR 13	71	DR 1	DR 39	80	2%	2%	300	400
Durham Region	DR 11	72	DR 1	DR 30	80	2%	2%	2100	2600
Durham Region	DR 1	73	York Bndry	DR 13 W	80	2%	2%	1700	2100
Durham Region	DR 1	74	DR 13 W	DR 13 E	80	2%	2%	1700	2100
Durham Region	DR 1	75	DR 13 E	DR 11	80	2%	2%	2100	2600
Durham Region	DR 23	76	DR 15	Hwy 48	80	2%	2%	4000	5000
Durham Region	DR 23	77	Hwy 48	DR 12	80	2%	2%	1800	2300
Durham Region	DR 23	78	DR 12	YR 82	80	2%	2%	1800	2300
Durham Region	DR 23	79	YR 82	DR 10	80	2%	2%	2500	3100
Durham Region	DR 23	80	DR 10	DR 13	80	2%	2%	2200	2800
Durham Region	DR 23	81	DR 13	Hwy 47	80	2%	2%	3100	3900
Durham Region	DR 12	82	Hwy 46	Hwy 12	80	2%	2%	2400	3000
Durham Region	DR 12	83	Hwy 12	DR 23	80	2%	2%	2400	3000

DO NOTHING ALTERNATIVE (ROUTE A)										
JURISDICTION	NUMBER/NAME	Section			2011 Do Nothing			2021 Do Nothing		
		Number	From	To	AADT	SADT	PHV	AADT	SADT	PHV
MTO	Hwy 404	1	Davis Dr	Green Lane	47800	52600	4800	54900	60400	5500
MTO	Hwy 404	2	Green Lane	YR 13	42800	47100	4300	45800	50400	4600
MTO	Hwy 404	3	YR 13	YR 77	24700	27200	2450	29300	32200	2950
MTO	Hwy 11	4	York Bndry	Bathurst St	22300	24500	1850	26200	28800	2600
MTO	Hwy 11	5	Bathurst St	Holland Landing	18600	23300	1550	21900	27500	2200
MTO	Hwy 11	6	Holland Landing	Hwy 9/Davis Dr	28100	29800	2350	32900	34900	3300
MTO	Hwy 12	7	Hwy 48	Hwy 7	<6000			8300	7800	650
MTO	Hwy 7/12	8	Hwy 7	DR 10	7900	9800	650	10700	13300	1050
MTO	Hwy 7/12	9	DR 10	DR 6	6200	7800	500	8600	10800	850
MTO	Hwy 12/48	10	DR 15	Hwy 48	8200	14400	700	9000	15800	900
MTO	Hwy 12/48	11	DR 23	DR 15	8900	15600	750	8900	15600	900
MTO	Hwy 48	12	Hwy 12/48	York Bndry	8400	11100	550	7800	13600	800
MTO	Hwy 48	13	York Bndry	YR 18	22900	28700	1900	28600	35900	2400
MTO	Hwy 48	14	YR 18	YR 9	11300	14200	950	11200	14000	950
MTO	Hwy 48	15	YR 9	YR 32	17800	22100	1450	23100	29000	1950
MTO	Hwy 48	16	YR 32	YR 13	15700	19700	1300	20000	25100	1850
MTO	Hwy 48	17	YR 13	YR 31	11700	14300	1000	17600	21500	1450
MTO	Hwy 48	18	YR 78	YR 32	14500	18100	1200	19900	24900	1650
York Region	YR 12	19	YR 32	YR 77	19700	24700	1650	26300	32900	2200
York Region	YR 12	20	YR 77	YR 13	7900	9900	650	7900	9900	650
York Region	YR 12	21	YR 13	Green Lane	12800	15800	1050	12800	15800	1050
York Region	YR 12	22	Green Lane	YR 31	16500	20600	1400	18700	23300	1550
York Region	YR 8	23	YR 78	YR 8A	<6000			10300	13200	850
York Region	YR 8	24	YR 8A	YR 79	17300	21700	1450	21800	27400	1800
York Region	YR 8	25	YR 79	YR 32	39200	49200	3250	50000	62700	4150
York Region	YR 8	26	YR 32	YR 77	47200	59100	3950	58900	73800	4900
York Region	YR 8	27	YR 77	YR 13	24400	30500	2050	33200	41500	2750
York Region	YR 8	28	YR 13	YR 31	18600	20800	1400	25800	32300	2150
York Region	YR 78	29	YR 9	YR 3	<6000			12400	15400	1050
York Region	YR 78	30	YR 3	YR 8	<6000			10700	13600	900
York Region	YR 78	31	YR 8	YR 78	8000	10000	850	8000	10000	850
York Region	YR 78	32	YR 79	YR 12	8800	11000	750	11500	14400	950
York Region	YR 3	33	YR 78	YR 8A	6000	7400	500	9100	11200	750
York Region	YR 3	34	YR 8A	YR 79	12400	16500	1050	16000	21300	1350
York Region	YR 3	35	YR 79	YR 32	12400	16500	1050	16000	21300	1350
York Region	YR 3	36	YR 32	YR 13	12300	16400	1050	17800	23700	1500
York Region	YR 3	37	YR 13	YR 31	11300	15100	950	15700	20900	1300
York Region	YR 80	38	YR 9	YR 18	<6000			9800	12300	800
York Region	YR 18	39	YR 80	Hwy 48	<6000			9800	12300	800
York Region	YR 18	40	Hwy 48	YR 79	11000	14000	900	13900	17700	1150
York Region	YR 18	41	YR 79	YR 32	12000	15000	1000	14900	18600	1250
York Region	YR 82	42	DR 23	DR 1	<6000			12300	15500	1050
York Region	YR 8A	43	YR 9	YR 3	17600	21900	1450	19400	24200	1600
York Region	YR 8A	44	YR 3	YR 8	13800	17200	1150	16700	20800	1400
York Region	YR 9	45	Hwy 48	YR 8A	9600	12000	800	11900	14900	1000
York Region	YR 9	46	YR 8A	YR 78	9800	12300	800	12400	15600	1050
York Region	YR 32	47	YR 18	Hwy 48	14800	18300	1200	18300	22900	1550
York Region	YR 32	48	Hwy 48	YR 3	17000	21400	1400	19100	24000	1600
York Region	YR 32	49	YR 3	YR 8	17000	21500	1400	21500	27200	1800
York Region	YR 32	50	YR 8	YR 12	<6000			13400	17000	1100
York Region	YR 77	51	YR 8	YR 12	23900	29600	2000	27100	33600	2250
York Region	YR 77	52	YR 12	Bathurst	13600	16900	1150	17700	22100	1500
York Region	YR 13	53	DR 30	Hwy 48	15200	19100	1250	20400	25600	1700
York Region	YR 13	54	Hwy 48	YR 3	17800	22300	1500	21200	26500	1750
York Region	YR 13	55	YR 3	YR 8	18200	22800	1500	23000	28800	1900
York Region	YR 13	56	YR 8	YR 12	25700	32400	2150	30600	38500	2550
York Region	YR 13	57	YR 12	YR 51	14300	18000	1200	18400	23100	1550
York Region	YR 31	58	DR 30	Hwy 48	12800	15900	1050	14900	18800	1250
York Region	YR 31	59	Hwy 48	YR 3	18600	23300	1550	23900	29900	2000
York Region	YR 31	60	YR 3	YR 8	18200	22800	1500	24300	30400	2050
York Region	YR 31	61	YR 8	YR 12	31600	39500	2650	36600	45800	3050
York Region	YR 31	62	YR 12	Hwy 11	18200	22800	1500	22100	27700	1850
York Region	YR 51	63	YR 77	Holland Landing)	<6000			<6000		
Durham Region	DR 30	64	DR 39	YR 13	12900	16400	1100	17100	21700	1450
Durham Region	DR 30	65	YR 13	DR 11	<6000			12000	15200	1000
Durham Region	DR 30	66	DR 11	YR 31	17800	22300	1500	22600	28300	1900
Durham Region	DR 39	67	York Bndr	DR 13	<6000			<6000		
Durham Region	DR 39	68	DR 13	DR 30	9100	11500	750	12000	15200	1000
Durham Region	DR 13	69	Hwy 7/12	DR 23	7100	9100	600	9000	11500	750
Durham Region	DR 13	70	DR 23	DR 1	14300	17800	1200	17000	21100	1400
Durham Region	DR 13	71	DR 1	DR 39	15000	20000	1250	17900	23900	1500
Durham Region	DR 11	72	DR 1	DR 30	13900	17200	1150	17900	22200	1500
Durham Region	DR 1	73	York Bndry	DR 13 W	10500	13000	900	13700	16900	1150
Durham Region	DR 1	74	DR 13 W	DR 13 E	<6000			10300	12700	850
Durham Region	DR 1	75	DR 13 E	DR 11	10500	13000	900	12300	15200	1050
Durham Region	DR 23	76	DR 15	Hwy 48	6800	8500	550	9000	11300	750
Durham Region	DR 23	77	Hwy 48	DR 12	<6000			7900	10100	650
Durham Region	DR 23	78	DR 12	YR 82	9400	12000	800	12100	15500	1000
Durham Region	DR 23	79	YR 82	DR 10	8700	10800	750	11400	14100	950
Durham Region	DR 23	80	DR 10	DR 13	11100	14100	950	11700	14900	1000
Durham Region	DR 23	81	DR 13	Hwy 47	7500	9400	650	12100	15200	1000
Durham Region	DR 12	82	Hwy 46	Hwy 12	<6000			7300	9100	600
Durham Region	DR 12	83	Hwy 12	DR 23	<6000			<6000		

ROUTE 8										
JURISDICTION	NUMBER/NAME	Section			Year 2011			Year 2021		
		Number	From	To	AADT	SADT	PHV	AADT	SADT	PHV
MTO	Hwy 404	1	Davis Dr	Green Lane	59800	65800	6000	67300	74000	6750
MTO	Hwy 404	2	Green Lane	YR 13	58500	84400	5850	65000	71500	6500
MTO	Hwy 404	3	YR 13	YR 77	59600	85600	5950	69800	76800	7000
MTO	Hwy 11	4	York Bndry	Bathurst St	22700	25000	1900	29600	33800	2450
MTO	Hwy 11	5	Bathurst St	Holland Landing	17100	21500	1450	19900	21100	1650
MTO	Hwy 11	6	Holland Landing	Hwy 8/Davis Dr	29100	30800	2450	36500	36900	3050
MTO	Hwy 12	7	Hwy 48	Hwy 7	7900	9800	650	11500	14200	950
MTO	Hwy 7/12	8	Hwy 7	DR 10	7800	9700	650	7800	9700	650
MTO	Hwy 7/12	9	DR 10	DR 8	7100	8900	600	10800	13500	900
MTO	Hwy 12/48	10	DR 15	Hwy 48	8200	14400	700	8200	14400	700
MTO	Hwy 12/48	11	DR 23	DR 15	8900	15600	750	8900	15600	750
MTO	Hwy 48	12	Hwy 12/48	York Bndry	<6000			<6000		
MTO	Hwy 48	13	York Bndry	YR 18	10800	13300	900	13600	17100	1150
MTO	Hwy 48	14	YR 18	YR 9	9900	12400	850	9900	12400	850
MTO	Hwy 48	15	YR 9	YR 32	9400	11800	800	13800	17300	1150
MTO	Hwy 48	16	YR 32	YR 13	9400	11800	800	12200	15300	1000
MTO	Hwy 48	17	YR 13	YR 31	9900	12100	850	11500	14100	950
York Region	YR 12	18	YR 78	YR 32	11600	14500	950	12200	15300	1000
York Region	YR 12	19	YR 32	YR 77	9100	11400	750	14500	18200	1200
York Region	YR 12	20	YR 77	YR 13	7900	9900	650	9900	12400	850
York Region	YR 12	21	YR 13	Green Lane	12600	15800	1050	16900	21200	1400
York Region	YR 12	22	Green Lane	YR 31	18100	22600	1500	22100	27600	1850
York Region	YR 8	23	YR 78	YR 8A	<6000			<6000		
York Region	YR 8	24	YR 8A	YR 79	12800	16100	1050	18900	23800	1600
York Region	YR 8	25	YR 79	YR 32	12000	15100	1000	27000	33900	2250
York Region	YR 8	26	YR 32	YR 77	19800	24800	1650	34000	42600	2850
York Region	YR 8	27	YR 77	YR 13	17500	21900	1450	30100	37600	2500
York Region	YR 8	28	YR 13	YR 31	18500	23100	1550	27700	34600	2300
York Region	YR 78	29	YR 9	YR 3	<6000			<6000		
York Region	YR 78	30	YR 3	YR 8	<6000			<6000		
York Region	YR 78	31	YR 8	YR 79	8000	10000	650	8000	10000	650
York Region	YR 78	32	YR 79	YR 12	7200	9000	600	10700	13400	900
York Region	YR 3	33	YR 78	YR 8A	<6000			7500	9200	650
York Region	YR 3	34	YR 8A	YR 79	9800	13100	800	13200	17600	1100
York Region	YR 3	35	YR 79	YR 32	<6000			10600	14100	900
York Region	YR 3	36	YR 32	YR 13	6800	9100	550	12000	16000	1000
York Region	YR 3	37	YR 13	YR 31	8300	11100	700	12700	16900	1050
York Region	YR 80	38	YR 9	YR 18	9900	12400	850	<6000		
York Region	YR 18	39	YR 80	Hwy 48	7900	9900	650	13300	16600	1100
York Region	YR 18	40	Hwy 48	YR 79	<8000			12100	15400	1000
York Region	YR 18	41	YR 79	YR 32	<6000			13800	17300	1150
York Region	YR 82	42	DR 23	DR 1	<6000			<6000		
York Region	YR 8A	43	YR 9	YR 3	7600	9500	650	13800	17200	1150
York Region	YR 8A	44	YR 3	YR 8	10400	13000	850	16200	20200	1350
York Region	YR 9	45	Hwy 48	YR 8A	9800	12000	800	9600	12000	800
York Region	YR 9	46	YR 8A	YR 78	9800	12300	800	9800	12300	800
York Region	YR 32	47	YR 18	Hwy 48	8000	7500	500	11800	14500	950
York Region	YR 32	48	Hwy 48	YR 3	10000	12600	850	12100	15200	1000
York Region	YR 32	49	YR 3	YR 8	9100	11500	750	10600	13400	900
York Region	YR 32	50	YR 8	YR 12	<6000			10200	12900	850
York Region	YR 77	51	YR 8	YR 12	13500	16700	1150	18000	22300	1500
York Region	YR 77	52	YR 12	Bathurst	15200	18900	1250	21200	26400	1750
York Region	YR 13	53	DR 30	Hwy 48	13300	16700	1100	16800	21100	1400
York Region	YR 13	54	Hwy 48	YR 3	13000	16300	1100	16600	20800	1400
York Region	YR 13	55	YR 3	YR 8	11500	14400	950	15900	19900	1350
York Region	YR 13	56	YR 8	YR 12	22200	28000	1850	32600	41100	2700
York Region	YR 13	57	YR 12	YR 51	15700	19700	1300	19800	24900	1650
York Region	YR 31	58	DR 30	Hwy 48	10900	13800	900	12700	16000	1050
York Region	YR 31	59	Hwy 48	YR 3	14100	17700	1200	17300	21700	1450
York Region	YR 31	60	YR 3	YR 8	13200	16500	1100	16600	20800	1400
York Region	YR 31	61	YR 8	YR 12	31400	39300	2600	34000	42500	2850
York Region	YR 31	62	YR 12	Hwy 11	18600	23300	1550	27200	34100	2250
York Region	YR 51	63	YR 77	Holland Landing)	<6000			6900	8600	600
Durham Region	DR 30	64	DR 39	YR 13	8300	10500	700	12800	16200	1050
Durham Region	DR 30	65	YR 13	DR 11	<6000			<6000		
Durham Region	DR 30	66	DR 11	YR 31	12800	15800	1050	17700	22100	1500
Durham Region	DR 39	67	York Bndr	DR 13	<6000			6900	8300	600
Durham Region	DR 39	68	DR 13	DR 30	<6000			7200	9100	600
Durham Region	DR 13	69	Hwy 7/12	DR 23	<6000			6600	8400	550
Durham Region	DR 13	70	DR 23	DR 1	10200	12700	850	14200	17600	1200
Durham Region	DR 13	71	DR 1	DR 39	10700	14300	900	15500	20700	1300
Durham Region	DR 11	72	DR 1	DR 30	10700	13200	900	14400	17800	1200
Durham Region	DR 1	73	York Bndry	DR 13 W	<6000			<6000		
Durham Region	DR 1	74	DR 13 W	DR 13 E	7900	9800	650	10700	13200	900
Durham Region	DR 1	75	DR 13 E	DR 11	<6000			<6000		
Durham Region	DR 23	76	DR 15	Hwy 48	<6000			6900	8600	600
Durham Region	DR 23	77	Hwy 48	DR 12	11100	14200	950	15400	19700	1300
Durham Region	DR 23	78	DR 12	YR 82	<6000			8400	10700	700
Durham Region	DR 23	79	YR 82	DR 10	<6000			6800	8400	550
Durham Region	DR 23	80	DR 10	DR 13	7800	9900	650	8300	10600	700
Durham Region	DR 23	81	DR 13	Hwy 47	8200	10300	700	11100	14000	950
Durham Region	DR 12	82	Hwy 46	Hwy 12	7000	8800	600	10100	12600	850
Durham Region	DR 12	83	Hwy 12	DR 23	<6000			6700	8400	550
MTO	Hwy 404 Rte B	90	YR 77	YR 32	64100	70500	6400	76300	83900	7650
MTO	Hwy 404 Rte B	91	YR 32	YR 8	63800	70200	6400	75600	83200	7550
MTO	Hwy 404 Rte B	92	YR 8	YR 3	44600	49100	4450	57800	63400	5750
MTO	Hwy 404 Rte B	93	YR 3	Hwy 48	46700	51400	4850	59700	65700	5950
MTO	Hwy 404 Rte B	94	Hwy 48	YR 18	38600	42500	3850	51100	56200	5100
MTO	Hwy 404 Rte B	95	YR 18	DR 23	34200	37600	3400	48700	53600	4850
MTO	Hwy 404 Rte B	96	DR 23	Hwy 12/DR 12	23200	25500	2300	29000	31900	2900
MTO	Hwy 404 Extension	105	Hwy 12/DR 12	DR 15	16200	17800	1600	19000	20900	1900
MTO	Hwy 404 Extension	106	DR 15	Hwy 48 (E-W)	9000	9900	900	10600	11700	1050

ROUTE C										
JURISDICTION	NUMBER/NAME	Section		To	Year 2011			Year 2021		
		Number	From		AADT	SADT	PHV	AADT	SADT	PHV
MTO	Hwy 404	1	Davis Dr	Green Lane	47800	52600	4800	51300	56400	5150
MTO	Hwy 404	2	Green Lane	YR 13	45800	50400	4600	49500	54500	4950
MTO	Hwy 404	3	YR 13	YR 77	48100	52900	4800	48800	53700	4900
MTO	Hwy 11	4	York Bndry	Bathurst St	22900	25200	1900	26400	29000	2200
MTO	Hwy 11	5	Bathurst St	Holland Landing	16700	21000	1400	34200	42900	2850
MTO	Hwy 11	6	Holland Landing	Hwy 9/Davis Dr	29900	31700	2500	36100	38300	3000
MTO	Hwy 12	7	Hwy 48	Hwy 7	15100	18700	1250	8700	10800	750
MTO	Hwy 7/12	8	Hwy 7	DR 10	7800	9700	850	13000	*8100	1100
MTO	Hwy 7/12	9	DR 10	DR 8	7100	8900	600	12500	15600	1050
MTO	Hwy 12/48	10	DR 15	Hwy 48	10100	17700	850	11800	20700	1000
MTO	Hwy 12/48	11	DR 23	DR 15	8900	15600	750	8900	15600	750
MTO	Hwy 48	12	Hwy 12/48	York Bndry	<6000			4600	8000	400
MTO	Hwy 48	13	York Bndry	YR 18	12800	15800	1050	17200	21600	1450
MTO	Hwy 48	14	YR 18	YR 9	9900	12400	850	12400	15500	1050
MTO	Hwy 48	15	YR 9	YR 32	14800	18600	1250	20000	25100	1650
MTO	Hwy 48	16	YR 32	YR 13	15400	19300	1300	19200	24100	1600
MTO	Hwy 48	17	YR 13	YR 31	8900	10900	750	14500	17700	1200
MTO	Hwy 48	18	YR 78	YR 32	13600	17000	1150	18700	23400	1550
York Region	YR 12	19	YR 32	YR 77	14800	18500	1250	22000	27600	1850
York Region	YR 12	20	YR 77	YR 13	7900	9900	650	12300	15400	1050
York Region	YR 12	21	YR 13	Green Lane	13100	16400	1100	19000	23800	1600
York Region	YR 12	22	Green Lane	YR 31	20000	25000	1650	25400	31700	2100
York Region	YR 8	23	YR 78	YR 8A	<6000			8500	10900	700
York Region	YR 8	24	YR 8A	YR 79	13800	17300	1150	21400	26900	1800
York Region	YR 8	25	YR 79	YR 32	38300	49300	3300	46400	58200	3850
York Region	YR 8	26	YR 32	YR 77	36700	46000	3050	46100	57700	3850
York Region	YR 8	27	YR 77	YR 13	24000	30000	2000	37200	46500	3100
York Region	YR 8	28	YR 13	YR 31	23100	28900	1950	29500	36900	2450
York Region	YR 78	29	YR 9	YR 3	<6000			4700	5800	400
York Region	YR 78	30	YR 3	YR 8	<6000			9600	12200	800
York Region	YR 78	31	YR 8	YR 79	8000	10000	850	8000	10000	650
York Region	YR 78	32	YR 79	YR 12	13600	17000	1150	11100	13900	950
York Region	YR 3	33	YR 78	YR 8A	<6000			8500	10500	700
York Region	YR 3	34	YR 8A	YR 79	10600	14100	900	14900	19900	1250
York Region	YR 3	35	YR 79	YR 32	10600	14100	900	14900	19900	1250
York Region	YR 3	36	YR 32	YR 13	12300	16400	1050	17500	23300	1450
York Region	YR 3	37	YR 13	YR 31	9800	13100	800	18000	24000	1500
York Region	YR 80	38	YR 9	YR 18	<6000			3000	3800	250
York Region	YR 18	39	YR 80	Hwy 48	<6000			3600	4500	300
York Region	YR 18	40	Hwy 48	YR 79	8500	8300	550	11100	14100	950
York Region	YR 18	41	YR 79	YR 32	7500	9400	650	12300	15400	1050
York Region	YR 82	42	DR 23	DR 1	8800	8600	550	12300	15500	1050
York Region	YR 8A	43	YR 9	YR 3	12100	15100	1000	18000	19900	1350
York Region	YR 8A	44	YR 3	YR 8	15200	18900	1250	18600	23200	1550
York Region	YR 9	45	Hwy 48	YR 8A	9600	12000	800	9800	12300	800
York Region	YR 9	46	YR 8A	YR 78	9800	12300	800	9800	12300	800
York Region	YR 32	47	YR 18	Hwy 48	8400	10500	700	19800	24900	1650
York Region	YR 32	48	Hwy 48	YR 3	8800	11100	750	12700	16000	1050
York Region	YR 32	49	YR 3	YR 8	7800	9900	650	11800	14900	1000
York Region	YR 32	50	YR 8	YR 12	<6000			11300	14300	950
York Region	YR 77	51	YR 8	YR 12	15400	19100	1300	22300	27600	1850
York Region	YR 77	52	YR 12	Bathurst	16500	20600	1400	22000	27400	1850
York Region	YR 13	53	DR 30	Hwy 48	11900	15000	1000	18600	23400	1550
York Region	YR 13	54	Hwy 48	YR 3	11300	14100	950	15800	19800	1300
York Region	YR 13	55	YR 3	YR 8	10600	13300	900	15200	19000	1250
York Region	YR 13	56	YR 8	YR 12	24200	30500	2000	31600	39800	2650
York Region	YR 13	57	YR 12	YR 51	16000	20100	1350	21000	26400	1750
York Region	YR 31	58	DR 30	Hwy 48	9600	12100	800	15800	20000	1300
York Region	YR 31	59	Hwy 48	YR 3	13300	16700	1100	17000	21300	1400
York Region	YR 31	60	YR 3	YR 8	13400	16800	1100	22500	28200	1900
York Region	YR 31	61	YR 8	YR 12	28800	36000	2400	36700	45900	3050
York Region	YR 31	62	YR 12	Hwy 11	19700	24700	1650	26800	33600	2250
York Region	YR 51	63	YR 77	Holland Landing	<6000			6400	8000	550
Durham Region	DR 30	64	DR 39	YR 13	9300	11800	800	14800	18800	1250
Durham Region	DR 30	65	YR 13	DR 11	<6000			7400	9400	600
Durham Region	DR 30	66	DR 11	YR 31	13400	16800	1100	19500	24400	1650
Durham Region	DR 39	67	York Bndr	DR 13	<6000			3200	3800	250
Durham Region	DR 39	68	DR 13	DR 30	<6000			6500	8200	550
Durham Region	DR 13	69	Hwy 7/12	DR 23	<6000			9000	11500	750
Durham Region	DR 13	70	DR 23	DR 1	13700	17000	1150	16000	19900	1350
Durham Region	DR 13	71	DR 1	DR 39	7100	9500	600	9600	12800	800
Durham Region	DR 11	72	DR 1	DR 30	10000	12400	850	14300	17700	1200
Durham Region	DR 1	73	York Bndry	DR 13 W	8200	10100	700	13600	16800	1150
Durham Region	DR 1	74	DR 13 W	DR 13 E	13700	16900	1150	19800	24500	1650
Durham Region	DR 1	75	DR 13 E	DR 11	<6000			7300	9000	600
Durham Region	DR 23	76	DR 15	Hwy 48	<6000			6600	8300	550
Durham Region	DR 23	77	Hwy 48	DR 12	<6000			2500	3200	200
Durham Region	DR 23	78	DR 12	YR 82	8200	10500	700	8100	10400	700
Durham Region	DR 23	79	YR 82	DR 10	<6000			7700	9500	650
Durham Region	DR 23	80	DR 10	DR 13	<6000			12900	16400	1100
Durham Region	DR 23	81	DR 13	Hwy 47	7300	9200	600	11600	14600	950
Durham Region	DR 12	82	Hwy 48	Hwy 12	<6000			8500	10600	700
Durham Region	DR 12	83	Hwy 12	DR 23	<6000			2300	2900	200
MTO	Hwy 404 Rte C	100	YR 77	YR 8	43800	48200	4400	49000	53900	4900
MTO	Hwy 404 Rte C	101	YR 8	YR 3	43800	48200	4400	49000	53900	4900
MTO	Hwy 404 Rte C	102	YR 3	Hwy 48	44900	49400	4500	53200	58500	5300
MTO	Hwy 404 Rte C	103	Hwy 48	DR 1	36000	39600	3600	45600	50200	4550
MTO	Hwy 404 Rte C	104	DR 1	Hwy 12/DR 12	28000	28600	2600	35000	38500	3500
MTO	Hwy 404 Extension	105	Hwy 12/DR 12	DR 15	12100	13300	1200	15900	17500	1600
MTO	Hwy 404 Extension	106	DR 15	Hwy 48 (E-W)	12100	13300	1200	15900	17500	1600

C.2 TRAFFIC DATA FOR PREFERRED ROUTE

TECHNICALLY PREFERRED ROUTE													
JURISDICTION	NUMBER/NAME	Section			Year 2011			Year 2021			2021 With 404 TPR		
		Number	From	To	AADT	SADT	PHV	AADT	SADT	PHV	AADT	SADT	PHV
MTO	Hwy 404	1	Davis Dr	Green Lane	59800	65800	6000	67300	74000	6750	67300	74000	6750
MTO	Hwy 404	2	Green Lane	YR 13	58500	64400	5850	65000	71500	6500	65000	71500	6500
MTO	Hwy 404	3	YR 13	YR 77	59800	65600	5950	69800	76800	7000	69800	76800	7000
MTO	Hwy 11	4	York Bndry	Bathurst St	22700	25000	1900	29600	33800	2450	29600	33800	2450
MTO	Hwy 11	5	Bathurst St	Holland Landing	17100	21500	1450	19900	21100	1650	19900	21100	1650
MTO	Hwy 11	6	Holland Landing	Hwy 9/Davis Dr	29100	30800	2450	36500	36900	3050	36500	36900	3050
MTO	Hwy 12	7	Hwy 48	Hwy 7	7900	9800	650	11500	14200	950	8900	8500	550
MTO	Hwy 7/12	8	Hwy 7	DR 10	7800	9700	650	7800	9700	650	4700	5800	400
MTO	Hwy 7/12	9	DR 10	DR 6	7100	8800	600	10800	13500	900	6500	8100	550
MTO	Hwy 12/48	10	DR 15	Hwy 48	8200	14400	700	8200	14400	700	15600	27400	1300
MTO	Hwy 12/48	11	DR 23	DR 15	8900	15600	750	8900	15600	750	8900	15600	750
MTO	Hwy 48	12	Hwy 12/48	York Bndry	<6000			<6000			18000		1500
MTO	Hwy 48	13	York Bndry	YR 18	10600	13300	900	13600	17100	1150	9500	11900	800
MTO	Hwy 48	14	YR 18	YR 9	9900	12400	850	9900	12400	850	6950	8700	600
MTO	Hwy 48	15	YR 9	YR 32	9400	11800	800	13800	17300	1150	12400	15600	1050
MTO	Hwy 48	16	YR 32	YR 13	9400	11800	800	12200	15300	1000	12200	15300	1000
MTO	Hwy 48	17	YR 13	YR 31	9900	12100	850	11500	14100	950	11500	14100	950
York Region	YR 12	18	YR 78	YR 32	11600	14500	950	12200	15300	1000	11000	13800	900
York Region	YR 12	19	YR 32	YR 77	9100	11400	750	14500	18200	1200	13050	16300	1100
York Region	YR 12	20	YR 77	YR 13	7900	9900	650	9900	12400	850	9900	12400	850
York Region	YR 12	21	YR 13	Green Lane	12600	15800	1050	16900	21200	1400	16900	21200	1400
York Region	YR 12	22	Green Lane	YR 31	18100	22600	1500	22100	27600	1850	22100	27600	1850
York Region	YR 8	23	YR 78	YR 8A	<6000			<6000			<6000		
York Region	YR 8	24	YR 8A	YR 79	12800	16100	1050	18900	23800	1600	17000	21400	1450
York Region	YR 8	25	YR 79	YR 32	12000	15100	1000	27000	33900	2250	24300	30500	2050
York Region	YR 8	26	YR 32	YR 77	19800	24800	1650	34000	42600	2850	30800	38300	2550
York Region	YR 8	27	YR 77	YR 13	17500	21900	1450	30100	37600	2500	30100	37600	2500
York Region	YR 8	28	YR 13	YR 31	18500	23100	1550	27700	34800	2300	27700	34800	2300
York Region	YR 78	29	YR 9	YR 3	<6000			<6000			<6000		
York Region	YR 78	30	YR 3	YR 8	<6000			<6000			<6000		
York Region	YR 78	31	YR 8	YR 79	8000	10000	850	8000	10000	850	7200	9000	800
York Region	YR 78	32	YR 79	YR 12	7200	9000	800	10700	13400	900	9650	12100	800
York Region	YR 3	33	YR 78	YR 8A	<6000			7500	9200	650	6750	8300	600
York Region	YR 3	34	YR 8A	YR 79	9600	13100	800	13200	17600	1100	11900	15900	1000
York Region	YR 3	35	YR 79	YR 32	<6000			10600	14100	900	9550	12700	800
York Region	YR 3	36	YR 32	YR 13	6800	9100	550	12000	16000	1000	12000	16000	1000
York Region	YR 3	37	YR 13	YR 31	8300	11100	700	12700	16900	1050	12700	16900	1050
York Region	YR 80	38	YR 9	YR 18	9900	12400	850	<6000			<6000		
York Region	YR 18	39	YR 80	Hwy 48	7900	9900	650	13300	16800	1100	9300	11600	750
York Region	YR 18	40	Hwy 48	YR 79	<6000			12100	15400	1000	8450	10800	700
York Region	YR 18	41	YR 79	YR 32	<6000			13800	17300	1150	9650	12100	800
York Region	YR 82	42	DR 23	DR 1	<6000			<6000			<6000		
York Region	YR 8A	43	YR 9	YR 3	7600	9500	650	13800	17200	1150	12400	15400	1050
York Region	YR 8A	44	YR 3	YR 8	10400	13000	850	16200	20200	1350	14800	18200	1200
York Region	YR 8	45	Hwy 48	YR 8A	9800	12000	800	9800	12000	800	6700	8400	550
York Region	YR 9	46	YR 8A	YR 78	9800	12300	800	9800	12300	800	6950	8600	550
York Region	YR 32	47	YR 18	Hwy 48	6000	7500	500	11600	14500	950	8100	10100	650
York Region	YR 32	48	Hwy 48	YR 3	10000	12600	850	12100	15200	1000	10900	13700	900
York Region	YR 32	49	YR 3	YR 8	9100	11500	750	10600	13400	900	9550	12100	800
York Region	YR 32	50	YR 8	YR 12	<6000			10200	12900	850	9200	11700	750
York Region	YR 77	51	YR 8	YR 12	13500	16700	1150	18000	22300	1500	18000	22300	1500
York Region	YR 77	52	YR 12	Bathurst	15200	18900	1250	21200	26400	1750	21200	26400	1750
York Region	YR 13	53	DR 30	Hwy 48	13300	16700	1100	16800	21100	1400	16800	21100	1400
York Region	YR 13	54	Hwy 48	YR 3	13000	16300	1100	16600	20800	1400	16600	20800	1400
York Region	YR 13	55	YR 3	YR 8	11500	14400	950	15900	19900	1350	15900	19900	1350
York Region	YR 13	56	YR 8	YR 12	22200	28000	1850	32600	41100	2700	32600	41100	2700
York Region	YR 13	57	YR 12	YR 51	15700	19700	1300	18800	24900	1650	18800	24900	1650
York Region	YR 31	58	DR 30	Hwy 48	10900	13600	900	12700	16000	1050	12700	16000	1050
York Region	YR 31	59	Hwy 48	YR 3	14100	17700	1200	17300	21700	1450	17300	21700	1450
York Region	YR 31	60	YR 3	YR 8	13200	16500	1100	16600	20800	1400	16600	20800	1400
York Region	YR 31	61	YR 8	YR 12	31400	39300	2600	34000	42500	2850	34000	42500	2850
York Region	YR 31	62	YR 12	Hwy 11	18600	23300	1550	27200	34100	2250	27200	34100	2250
York Region	YR 51	63	YR 77	Holland Landing	<6000			6900	8600	600	6900	8600	600
Durham Region	DR 30	64	DR 39	YR 13	8300	10500	700	12800	16200	1050	12800	16200	1050
Durham Region	DR 30	65	YR 13	DR 11	<6000			<6000			<6000		
Durham Region	DR 30	66	DR 11	YR 31	12600	15800	1050	17700	22100	1500	17700	22100	1500
Durham Region	DR 39	67	York Bndr	DR 13	<6000			6900	8300	600	4850	5800	400
Durham Region	DR 39	68	DR 13	DR 30	<6000			7200	9100	600	5050	6400	400
Durham Region	DR 13	69	Hwy 7/12	DR 23	<6000			6600	8400	550	3950	5000	350
Durham Region	DR 13	70	DR 23	DR 1	10200	12700	850	14200	17600	1200	8500	10800	700
Durham Region	DR 13	71	DR 1	DR 39	10700	14300	900	15500	20700	1300	10850	14500	900
Durham Region	DR 11	72	DR 1	DR 30	10700	13200	900	14400	17800	1200	10100	12500	850
Durham Region	DR 1	73	York Bndry	DR 13 W	<6000			<6000			12000		1000
Durham Region	DR 1	74	DR 13 W	DR 13 E	7900	9800	650	10700	13200	900	6400	7900	550
Durham Region	DR 1	75	DR 13 E	DR 11	<6000			<6000			<6000		
Durham Region	DR 23	76	DR 15	Hwy 48	<6000			6900	8600	600	8400	10500	700
Durham Region	DR 23	77	Hwy 48	DR 12	11100	14200	950	15400	19700	1300	8400	10700	700
Durham Region	DR 23	78	DR 12	YR 82	<6000			8400	10700	700	11400	14800	950
Durham Region	DR 23	79	YR 82	DR 10	<6000			6800	8400	550	4100	5100	350
Durham Region	DR 23	80	DR 10	DR 13	7800	9900	650	8300	10800	700	5000	6400	400
Durham Region	DR 23	81	DR 13	Hwy 47	8200	10300	700	11100	14000	950	8650	8400	550
Durham Region	DR 12	82	Hwy 48	Hwy 12	7000	8800	600	10100	12600	850	8400	10500	700
Durham Region	DR 12	83	Hwy 12	DR 23	<6000			6700	8400	550	9000	11300	750
MTO	Hwy 404	84	YR 77	YR 32	64100	70500	6400	76300	83900	7650	68650	75500	6900
MTO	Hwy 404	85	YR 32	YR 8	63800	70200	6400	75600	83200	7550	68050	74900	6800
MTO	Hwy 404	86	YR 8	YR 3	44600	49100	4450	57600	63400	5750	51850	57000	5200
MTO	Hwy 404	87	YR 3	Hwy 48	46700	51400	4650	56700	65700	5650	53750	59100	5350
MTO	Hwy 404	88	Hwy 48	YR 18	38600	42500							

APPENDIX D

SOUND LEVELS RESULTS FOR ALTERNATIVE ROUTES

HWY 404 DISTANCE TO ACHIEVE SPECIFIC SOUND LEVELS CONTOURS

FUTURE - DO - NOTHING , YEAR 2011 - (ROUTE A)

JURISDICTION	NUMBER/ NAME	Nmber	From	To	DISTANCE IN METRES FROM ROAD CENTER LINE TO ACHIVE SOUND LEVELS						45 dBA
					75 dBA	70 dBA	65 dBA	60 dBA	55 dBA	50 dBA	
MTO	Hwy 404	1	Davis Dr	Green Lane	20	35	65	135	270	475	879
MTO	Hwy 404	2	Green Lane	YR 13	15	30	65	125	152	268	495
MTO	Hwy 404	3	YR 13	YR 77	15	25	45	90	180	317	586

Note Data beyond 500 metres are approximate

TABLE 1.D

S.S. WILSON AND ASSOCIATES
NOISE ASSESSMENT STUDY
HIGHWAY 404 EXTENSION- DAVIS DRIVE TO HIGHWAY 12
FOR COLE, SHERMAN AND ASSOCIATES
TABLE TEMP-1

ROUTE A (2011 Future-Do-Nothing)							DISTANCE IN METRES TO MEET Leq					
Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2011 SADT	Leq 24 Hr @ 25 m	70	65	60	55	50	45
1	MTO	Hwy 404	1	100	52,600	72.1	34	67	135	271	544	1090
2	MTO	Hwy 404	2	100	47,100	71.7	31	63	127	254	509	1019
3	MTO	Hwy 404	3	100	27,200	69.3	23	45	91	182	365	732
4	MTO	Hwy 11	4	80	24,500	66.4	15	30	61	122	245	491
5	MTO	Hwy 11	5	80	23,300	66.2	15	29	59	118	237	476
6	MTO	Hwy 11	6	80	29,800	67.3	17	34	69	137	275	552
7	MTO	Hwy 12	7	80	6,000	59.4	6	11	23	46	92	185
8	MTO	Hwy 7/12	8	80	9,800	61.5	8	15	31	62	124	249
9	MTO	Hwy 7/12	9	80	7,800	60.5	7	13	27	54	108	217
10	MTO	Hwy 12/48	10	80	14,400	67.3	17	34	69	138	277	555
11	MTO	Hwy 12/48	11	80	15,600	67.6	18	36	72	145	291	583
12	MTO	Hwy 48	12	80	11,100	66.2	15	29	59	118	237	475
13	MTO	Hwy 48	13	80	28,700	70.3	26	52	105	210	420	842
14	MTO	Hwy 48	14	80	14,200	67.2	17	34	68	137	275	551
15	MTO	Hwy 48	15	80	22,100	67.0	17	33	66	133	267	535
16	MTO	Hwy 48	16	80	19,700	66.5	15	31	62	124	249	499
17	MTO	Hwy 48	17	80	14,300	65.1	13	25	51	102	205	411
18	York Region	YR 12	18	50	18,100	59.7	6	12	24	48	97	194
19	York Region	YR 12	19	80	24,700	65.5	13	27	54	108	217	434
20	York Region	YR 12	20	80	9,900	61.6	8	15	31	62	125	250
21	York Region	YR 12	21	80	15,800	63.6	10	21	41	83	165	332
22	York Region	YR 12	22	70	20,600	63.4	10	20	40	81	162	325
23	York Region	YR 8	23	80	6,000	59.4	6	11	23	46	92	185
24	York Region	YR 8	24	80	21,700	65.0	12	25	50	100	200	402
25	York Region	YR 8	25	70	49,200	67.2	17	34	68	137	274	550
26	York Region	YR 8	26	80	59,100	69.3	23	46	91	183	367	736
27	York Region	YR 8	27	80	30,500	66.4	15	31	61	123	246	493
28	York Region	YR 8	28	80	20,800	64.8	12	24	49	97	195	392
29	York Region	YR 78	29	80	6,000	59.4	6	11	23	46	92	185
30	York Region	YR 78	30	80	6,000	59.4	6	11	23	46	92	185
31	York Region	YR 78	31	70	10,000	60.3	6	13	26	52	105	210
32	York Region	YR 78	32	60	11,000	59.2	6	11	23	45	90	181
33	York Region	YR 3	33	80	7,400	60.3	6	13	26	52	105	210
34	York Region	YR 3	34	80	16,500	63.8	11	21	42	85	170	340
35	York Region	YR 3	35	80	16,500	63.8	11	21	42	85	170	340
36	York Region	YR 3	36	80	16,400	63.7	10	21	42	84	169	339
37	York Region	YR 3	37	80	15,100	63.4	10	20	40	80	161	323
38	York Region	YR 80	38	80	6,000	59.4	6	11	23	46	92	185
39	York Region	YR 18	39	80	6,000	59.4	6	11	23	46	92	185
40	York Region	YR 18	40	80	14,000	63.1	10	19	38	77	154	308

TABLE 2.D

ROUTE A (2011 Future-Do-Nothing)							DISTANCE IN METRES TO MEET Leq					
Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2011 SADT	Leq 24 Hr	70	65	60	55	50	45
41	York Region	YR 18	41	80	15,000	63.4	10	20	40	80	160	321
42	York Region	YR 82	42	80	6,000	59.4	6	11	23	46	92	185
43	York Region	YR 8A	43	80	21,900	65.0	12	25	50	101	202	404
44	York Region	YR 8A	44	80	17,200	64.0	11	22	43	87	174	349
45	York Region	YR 9	45	50	12,000	57.9	5	9	19	38	75	151
46	York Region	YR 9	46	50	12,300	58.0	5	10	19	38	77	154
47	York Region	YR 32	47	80	18,300	64.2	11	22	45	90	181	362
48	York Region	YR 32	48	80	21,400	64.9	12	25	49	99	199	398
49	York Region	YR 32	49	80	21,500	64.9	12	25	50	99	199	399
50	York Region	YR 32	50	80	6,000	59.4	6	11	23	46	92	185
51	York Region	YR 77	51	80	29,600	66.3	15	30	60	121	242	485
52	York Region	YR 77	52	80	16,900	63.9	11	21	43	86	172	345
53	York Region	YR 13	53	80	19,100	64.4	11	23	46	93	186	372
54	York Region	YR 13	54	80	22,300	65.1	13	25	51	102	204	408
55	York Region	YR 13	55	80	22,800	65.2	13	26	51	103	206	414
56	York Region	YR 13	56	60	32,400	63.9	11	22	43	87	174	348
57	York Region	YR 13	57	80	18,000	64.2	11	22	45	89	179	359
58	York Region	YR 31	58	80	15,900	63.6	10	21	41	83	166	333
59	York Region	YR 31	59	80	23,300	65.3	13	26	52	104	209	419
60	York Region	YR 31	60	80	22,800	65.2	13	26	51	103	206	414
61	York Region	YR 31	61	80	39,500	67.6	18	36	72	144	288	577
62	York Region	YR 31	62	60	22,800	62.4	9	17	35	70	140	282
63	York Region	YR 51	63	60	6,000	56.6	4	8	16	31	63	126
64	Durham Region	DR 30	64	80	16,400	63.7	10	21	42	84	169	339
65	Durham Region	DR 30	65	80	6,000	59.4	6	11	23	46	92	185
66	Durham Region	DR 30	66	80	22,300	65.1	13	25	51	102	204	408
67	Durham Region	DR 39	67	80	6,000	59.4	6	11	23	46	92	185
68	Durham Region	DR 39	68	80	11,500	62.2	8	17	34	68	137	274
69	Durham Region	DR 13	69	80	9,100	61.2	7	15	30	59	119	238
70	Durham Region	DR 13	70	80	17,800	64.1	11	22	44	89	178	356
71	Durham Region	DR 13	71	80	20,000	64.6	12	24	47	95	191	382
72	Durham Region	DR 11	72	80	17,200	64.0	11	22	43	87	174	349
73	Durham Region	DR 1	73	80	13,000	62.7	9	18	37	73	147	295
74	Durham Region	DR 1	74	80	6,000	59.4	6	11	23	46	92	185
75	Durham Region	DR 1	75	80	13,000	62.7	9	18	37	73	147	295
76	Durham Region	DR 23	76	80	8,500	60.9	7	14	28	57	114	228
77	Durham Region	DR 23	77	80	6,000	59.4	6	11	23	46	92	185
78	Durham Region	DR 23	78	80	12,000	62.4	9	17	35	70	140	281
79	Durham Region	DR 23	79	80	10,800	61.9	8	16	33	66	131	264
80	Durham Region	DR 23	80	80	14,100	63.1	10	19	38	77	154	310
81	Durham Region	DR 23	81	80	9,400	61.3	7	15	30	60	121	242
82	Durham Region	DR 12	82	80	6,000	59.4	6	11	23	46	92	185
83	Durham Region	DR 12	83	80	6,000	59.4	6	11	23	46	92	185

NOTE: Distances to meet specific sound levels are approximate to within +/- 1.5 dBA

TABLE 2.D (CONT.)

HWY 404 DISTANCE TO ACHIEVE SPECIFIC SOUND LEVELS CONTOURS **YEAR 2011 - (ROUTE B)**

JURISDICTION	NUMBER/ NAME	Nmbcr	From	To	DISTANCE IN METRES FROM ROAD CENTER LINE TO ACHIEVE SOUND LEVELS						
					75 dBA	70 dBA	65 dBA	60 dBA	55 dBA	50 dBA	45 dBA
MTO	Hwy 404	1	Davis Dr	Green Lane	20	40	85	165	330	581	1074
MTO	Hwy 404	2	Green Lane	YR 13	20	40	80	160	325	572	1058
MTO	Hwy 404	3	YR 13	YR 77	20	40	85	170	340	598	1107
MTO	Hwy 404 Rte B	90	YR 77	YR 32	25	45	90	180	360	634	1172
MTO	Hwy 404 Rte B	91	YR 32	YR 8	25	45	90	180	355	625	1156
MTO	Hwy 404 Rte B	92	YR 8	YR 3	20	40	75	150	300	528	977
MTO	Hwy 404 Rte B	93	YR 3	Hwy 48	20	40	80	155	310	546	1009
MTO	Hwy 404 Rte B	94	Hwy 48	YR 18	20	35	70	140	280	493	912
MTO	Hwy 404 Rte B	95	YR 18	DR 23	20	35	70	140	270	475	879
MTO	Hwy 404 Rte B	96	DR 23	Hwy 12	15	25	50	100	200	352	651
MTO	Hwy 404 Extension	105	Hwy 12	DR 15	15	20	40	80	155	273	505
MTO	Hwy 404 Extension	106	DR 15	Hwy 48 (E-W)	15	15	30	55	110	194	358

Note Data beyond 500 metres are approximate

TABLE 3.D

S.S. WILSON AND ASSOCIATES
NOISE ASSESSMENT STUDY
HIGHWAY 404 EXTENSION- DAVIS DRIVE TO HIGHWAY 12
FOR COLE, SHERMAN AND ASSOCIATES
TABLE TEMP-2

Revised July 10, 1995 ROUTE B - YEAR 2021							DISTANCE IN METRES TO MEET Leq					
Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2021 SADT	Leq 24 Hr @ 25 m	70	65	60	55	50	45
1	MTO	Hwy 404	1	100	74,000	73.6	41	83	166	332	665	1334
2	MTO	Hwy 404	2	100	71,500	73.4	40	81	162	325	652	1306
3	MTO	Hwy 404	3	100	76,800	73.8	42	84	169	339	680	1364
4	MTO	Hwy 11	4	80	33,800	67.8	18	37	74	148	297	596
5	MTO	Hwy 11	5	80	21,100	65.8	14	28	56	112	224	448
6	MTO	Hwy 11	6	80	36,900	68.2	19	39	78	156	313	628
7	MTO	Hwy 12	7	80	14,200	63.1	10	19	39	77	155	311
8	MTO	Hwy 7/12	8	80	9,700	61.5	8	15	31	61	123	247
9	MTO	Hwy 7/12	9	80	13,500	62.9	9	19	37	75	150	302
10	MTO	Hwy 12/48	10	80	14,400	67.3	17	34	69	138	277	555
11	MTO	Hwy 12/48	11	80	15,600	67.6	18	36	72	145	291	583
12	MTO	Hwy 48	12	80	6,000	63.5	10	20	41	81	163	327
13	MTO	Hwy 48	13	80	17,100	68.0	19	38	76	153	307	616
14	MTO	Hwy 48	14	80	12,400	66.6	16	31	63	126	253	507
15	MTO	Hwy 48	15	80	17,300	66.0	14	29	57	115	230	461
16	MTO	Hwy 48	16	80	15,300	65.4	13	27	53	107	214	428
17	MTO	Hwy 48	17	80	14,100	65.1	13	25	51	101	203	408
18	York Region	YR 12	18	50	15,300	59.0	5	11	22	44	87	175
19	York Region	YR 12	19	80	18,200	64.2	11	22	45	90	180	361
20	York Region	YR 12	20	80	12,400	62.5	9	18	36	71	143	286
21	York Region	YR 12	21	80	21,200	64.9	12	25	49	99	198	396
22	York Region	YR 12	22	70	27,600	64.7	12	24	48	96	193	388
23	York Region	YR 8	23	80	6,000	59.4	6	11	23	46	92	185
24	York Region	YR 8	24	80	23,800	65.4	13	26	53	106	212	424
25	York Region	YR 8	25	70	33,900	65.6	14	27	54	109	219	438
26	York Region	YR 8	26	80	42,600	67.9	19	37	75	150	301	604
27	York Region	YR 8	27	80	37,600	67.4	17	35	70	139	279	560
28	York Region	YR 8	28	80	34,600	67.0	16	33	66	133	266	532
29	York Region	YR 78	29	80	6,000	59.4	6	11	23	46	92	185
30	York Region	YR 78	30	80	6,000	59.4	6	11	23	46	92	185
31	York Region	YR 78	31	70	10,000	60.3	6	13	26	52	105	210
32	York Region	YR 78	32	60	13,400	60.1	6	13	25	51	102	204
33	York Region	YR 3	33	80	9,200	61.2	7	15	30	60	119	239
34	York Region	YR 3	34	80	17,600	64.1	11	22	44	88	177	354
35	York Region	YR 3	35	80	14,100	63.1	10	19	38	77	154	310
36	York Region	YR 3	36	80	16,000	63.6	10	21	41	83	167	334
37	York Region	YR 3	37	80	16,900	63.9	11	21	43	86	172	345
38	York Region	YR 80	38	80	6,000	59.4	6	11	23	46	92	185
39	York Region	YR 18	39	80	16,600	63.8	11	21	42	85	170	342
40	York Region	YR 18	40	80	15,400	63.5	10	20	41	81	163	327

TABLE 4.D

ROUTE B - YEAR 2021							DISTANCE IN METRES TO MEET Leq					
Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2021 SADT	Leq 24 Hr	70	65	60	55	50	45
41	York Region	YR 18	41	80	17,300	64.0	11	22	43	87	175	350
42	York Region	YR 82	42	80	6,000	59.4	6	11	23	46	92	185
43	York Region	YR 8A	43	80	17,200	64.0	11	22	43	87	174	349
44	York Region	YR 8A	44	80	20,200	64.7	12	24	48	96	192	385
45	York Region	YR 9	45	50	12,000	57.9	5	9	19	38	75	151
46	York Region	YR 9	46	50	12,300	58.0	5	10	19	38	77	154
47	York Region	YR 32	47	80	14,500	63.2	10	20	39	78	157	315
48	York Region	YR 32	48	80	15,200	63.4	10	20	40	81	162	324
49	York Region	YR 32	49	80	13,400	62.9	9	19	37	75	150	300
50	York Region	YR 32	50	80	12,900	62.7	9	18	36	73	146	293
51	York Region	YR 77	51	80	22,300	65.1	13	25	51	102	204	408
52	York Region	YR 77	52	80	26,400	65.8	14	28	56	113	226	452
53	York Region	YR 13	53	80	21,100	64.8	12	24	49	98	197	395
54	York Region	YR 13	54	80	20,800	64.8	12	24	49	97	195	392
55	York Region	YR 13	55	80	19,900	64.6	12	24	47	95	190	381
56	York Region	YR 13	56	60	41,100	65.0	12	25	50	100	200	402
57	York Region	YR 13	57	80	24,900	65.6	13	27	54	109	218	436
58	York Region	YR 31	58	80	16,000	63.6	10	21	41	83	167	334
59	York Region	YR 31	59	80	21,700	65.0	12	25	50	100	200	402
60	York Region	YR 31	60	80	20,800	64.8	12	24	49	97	195	392
61	York Region	YR 31	61	80	42,500	67.9	19	37	75	150	301	603
62	York Region	YR 31	62	60	34,100	64.2	11	22	45	89	179	359
63	York Region	YR 51	63	60	8,600	58.2	5	10	19	39	78	156
64	Durham Region	DR 30	64	80	16,200	63.7	10	21	42	84	168	337
65	Durham Region	DR 30	65	80	6,000	59.4	6	11	23	46	92	185
66	Durham Region	DR 30	66	80	22,100	65.0	13	25	50	101	203	406
67	Durham Region	DR 39	67	80	8,300	60.8	7	14	28	56	112	225
68	Durham Region	DR 39	68	80	9,100	61.2	7	15	30	59	119	238
69	Durham Region	DR 13	69	80	8,400	60.8	7	14	28	56	113	226
70	Durham Region	DR 13	70	80	17,600	64.1	11	22	44	88	177	354
71	Durham Region	DR 13	71	80	20,700	64.8	12	24	48	97	195	390
72	Durham Region	DR 11	72	80	17,800	64.1	11	22	44	89	178	356
73	Durham Region	DR 1	73	80	6,000	59.4	6	11	23	46	92	185
74	Durham Region	DR 1	74	80	13,200	62.8	9	18	37	74	148	298
75	Durham Region	DR 1	75	80	6,000	59.4	6	11	23	46	92	185
76	Durham Region	DR 23	76	80	8,600	60.9	7	14	29	57	115	230
77	Durham Region	DR 23	77	80	19,700	64.5	12	23	47	94	189	379
78	Durham Region	DR 23	78	80	10,700	61.9	8	16	33	65	131	262
79	Durham Region	DR 23	79	80	8,400	60.8	7	14	28	56	113	226
80	Durham Region	DR 23	80	80	10,600	61.9	8	16	32	65	130	261
81	Durham Region	DR 23	81	80	14,000	63.1	10	19	38	77	154	308
82	Durham Region	DR 12	82	80	12,600	62.6	9	18	36	72	144	289
83	Durham Region	DR 12	83	80	8,400	60.8	7	14	28	56	113	226

NOTE: Distances to meet specific sound levels are approximate to within +/- 1.5 dBA

TABLE 4.D (CONT.)

HWY 404 DISTANCE TO ACHIEVE SPECIFIC SOUND LEVELS CONTOURS **YEAR 2021 - (ROUTE C)**

JURISDICTION	NUMBER/ NAME	Nmbcr	From	To	DISTANCE IN METRES FROM ROAD CENTER LINE TO ACHIEVE SOUND LEVELS						
					75 dBA	70 dBA	65 dBA	60 dBA	55 dBA	50 dBA	45 dBA
MTO	Hwy 404	1	Davis Dr	Green Lane	20	35	70	140	280	493	912
MTO	Hwy 404	2	Green Lane	YR 13	20	35	70	135	275	484	895
MTO	Hwy 404	3	YR 13	YR 77	20	35	70	135	275	484	895
MTO	Hwy 404 Rte C	100	YR 77	YR 8	20	35	70	135	275	484	895
MTO	Hwy 404 Rte C	101	YR 8	YR 3	20	35	70	135	275	484	895
MTO	Hwy 404 Rte C	102	YR 3	Hwy 48	20	35	70	145	290	510	944
MTO	Hwy 404 Rte C	103	Hwy 48	DR 1	20	35	65	130	260	458	847
MTO	Hwy 404 Rte C	104	DR 1	Hwy 12/DR 12	15	30	55	115	225	396	733
MTO	Hwy 404 Extension	105	Hwy 12/DR 12	DR 15	15	20	35	70	140	246	456
MTO	Hwy 404 Extension	106	DR 15	Hwy 48 (E-W)	15	20	35	70	140	246	456

Note: Data beyond 500 metres are approximate

TABLE 5.D

S.S. WILSON AND ASSOCIATES
NOISE ASSESSMENT STUDY
HIGHWAY 404 EXTENSION- DAVIS DRIVE TO HIGHWAY 12
FOR COLE, SHERMAN AND ASSOCIATES
TABLE TEMP-3

Revised : July 10, 1995							ROUTE C - YEAR 2021							DISTANCE IN METRES TO MEET Leq						
Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2021 SADT	Leq 24 Hr @ 25 m	70	65	60	55	50	45								
1	MTO	Hwy 404	1	100	56,400	72.4	35	70	141	283	567	1137								
2	MTO	Hwy 404	2	100	54,500	72.3	34	69	138	277	555	1113								
3	MTO	Hwy 404	3	100	53,700	72.2	34	68	137	275	550	1103								
4	MTO	Hwy 11	4	80	29,000	67.1	17	34	67	135	271	543								
5	MTO	Hwy 11	5	80	42,900	68.8	21	43	85	171	343	688								
6	MTO	Hwy 11	6	80	38,300	68.3	20	40	80	160	321	643								
7	MTO	Hwy 12	7	80	10,800	61.9	8	16	33	66	131	264								
8	MTO	Hwy 7/12	8	80	16,100	63.7	10	21	42	83	167	335								
9	MTO	Hwy 7/12	9	80	15,600	63.5	10	20	41	82	164	329								
10	MTO	Hwy 12/48	10	80	20,700	68.9	21	43	86	172	345	691								
11	MTO	Hwy 12/48	11	80	15,600	67.6	18	36	72	145	291	583								
12	MTO	Hwy 48	12	80	8,000	64.7	12	24	48	97	194	389								
13	MTO	Hwy 48	13	80	21,600	69.1	22	44	88	177	354	709								
14	MTO	Hwy 48	14	80	15,500	67.6	18	36	72	144	290	581								
15	MTO	Hwy 48	15	80	25,100	67.6	18	36	72	144	288	578								
16	MTO	Hwy 48	16	80	24,100	67.4	17	35	70	140	281	564								
17	MTO	Hwy 48	17	80	17,700	66.1	14	29	58	116	233	468								
18	York Region	YR 12	18	50	23,400	60.8	7	14	28	56	113	226								
19	York Region	YR 12	19	80	27,600	66.0	14	29	58	116	232	465								
20	York Region	YR 12	20	80	15,400	63.5	10	20	41	81	163	327								
21	York Region	YR 12	21	80	23,800	65.4	13	26	53	106	212	425								
22	York Region	YR 12	22	70	31,700	65.3	13	26	52	105	210	421								
23	York Region	YR 8	23	80	10,900	62.0	8	16	33	66	132	265								
24	York Region	YR 8	24	80	26,900	65.9	14	28	57	114	228	457								
25	York Region	YR 8	25	70	58,200	67.9	19	38	76	151	303	608								
26	York Region	YR 8	26	80	57,700	69.2	22	45	90	180	362	725								
27	York Region	YR 8	27	80	46,500	68.3	20	39	79	158	318	637								
28	York Region	YR 8	28	80	36,900	67.3	17	34	69	138	276	554								
29	York Region	YR 78	29	80	5,800	59.2	6	11	22	45	90	181								
30	York Region	YR 78	30	80	12,200	62.5	9	18	35	71	142	284								
31	York Region	YR 78	31	70	10,000	60.3	6	13	26	52	105	210								
32	York Region	YR 78	32	60	13,900	60.3	6	13	26	52	104	209								
33	York Region	YR 3	33	80	10,500	61.8	8	16	32	64	129	259								
34	York Region	YR 3	34	80	19,900	64.6	12	24	47	95	190	381								
35	York Region	YR 3	35	80	19,900	64.6	12	24	47	95	190	381								
36	York Region	YR 3	36	80	23,300	65.3	13	26	52	104	209	419								
37	York Region	YR 3	37	80	24,000	65.4	13	26	53	106	213	427								
38	York Region	YR 80	38	80	3,800	57.4	4	9	17	35	70	140								
39	York Region	YR 18	39	80	4,500	58.1	5	10	19	39	77	155								
40	York Region	YR 18	40	80	14,100	63.1	10	19	38	77	154	310								

TABLE 6.D

ROUTE C - YEAR 2021

DISTANCE IN METRES TO MEET Leq

Line #	JURISDICTION	NUMBER/NAME	CODE NUMBER	POSTED SPEED	2021 SADT	Leq 24 Hr	70	65	60	55	50	45
41	York Region	YR 18	41	80	15,400	63.5	10	20	41	81	163	327
42	York Region	YR 82	42	80	15,500	63.5	10	20	41	82	164	328
43	York Region	YR 8A	43	80	19,900	64.6	12	24	47	95	190	381
44	York Region	YR 8A	44	80	23,200	65.3	13	26	52	104	209	418
45	York Region	YR 9	45	50	12,300	58.0	5	10	19	38	77	154
46	York Region	YR 9	46	50	12,300	58.0	5	10	19	38	77	154
47	York Region	YR 32	47	80	24,900	65.6	13	27	54	109	218	436
48	York Region	YR 32	48	80	16,000	63.6	10	21	41	83	167	334
49	York Region	YR 32	49	80	14,900	63.3	10	20	40	80	160	320
50	York Region	YR 32	50	80	14,300	63.2	10	19	39	78	156	312
51	York Region	YR 77	51	80	27,600	66.0	14	29	58	116	232	465
52	York Region	YR 77	52	80	27,400	66.0	14	29	57	115	231	462
53	York Region	YR 13	53	80	23,400	65.3	13	26	52	105	210	420
54	York Region	YR 13	54	80	19,800	64.6	12	24	47	95	190	380
55	York Region	YR 13	55	80	19,000	64.4	11	23	46	92	185	371
56	York Region	YR 13	56	60	39,800	64.8	12	24	49	98	197	394
57	York Region	YR 13	57	80	26,400	65.8	14	28	56	113	226	452
58	York Region	YR 31	58	80	20,000	64.6	12	24	47	95	191	382
59	York Region	YR 31	59	80	21,300	64.9	12	25	49	99	198	397
60	York Region	YR 31	60	80	28,200	66.1	15	29	58	117	235	471
61	York Region	YR 31	61	80	45,900	68.2	20	39	78	157	315	632
62	York Region	YR 31	62	60	33,600	64.1	11	22	44	89	178	356
63	York Region	YR 51	63	60	8,000	57.9	5	9	19	37	75	150
64	Durham Region	DR 30	64	80	18,800	64.3	11	23	46	92	184	368
65	Durham Region	DR 30	65	80	9,400	61.3	7	15	30	60	121	242
66	Durham Region	DR 30	66	80	24,400	65.5	13	27	54	107	215	431
67	Durham Region	DR 39	67	80	3,800	57.4	4	9	17	35	70	140
68	Durham Region	DR 39	68	80	8,200	60.7	7	14	28	56	111	223
69	Durham Region	DR 13	69	80	11,500	62.2	8	17	34	68	137	274
70	Durham Region	DR 13	70	80	19,900	64.6	12	24	47	95	190	380
71	Durham Region	DR 13	71	80	12,800	62.7	9	18	36	73	146	292
72	Durham Region	DR 11	72	80	17,700	64.1	11	22	44	88	177	355
73	Durham Region	DR 1	73	80	16,800	63.9	11	21	43	86	172	344
74	Durham Region	DR 1	74	80	24,500	65.5	13	27	54	108	216	432
75	Durham Region	DR 1	75	80	9,000	61.1	7	15	29	59	118	236
76	Durham Region	DR 23	76	80	8,300	60.8	7	14	28	56	112	225
77	Durham Region	DR 23	77	80	3,200	56.7	4	8	16	31	63	126
78	Durham Region	DR 23	78	80	10,400	61.8	8	16	32	64	129	258
79	Durham Region	DR 23	79	80	9,500	61.4	8	15	30	61	122	244
80	Durham Region	DR 23	80	80	16,400	63.7	10	21	42	84	169	339
81	Durham Region	DR 23	81	80	14,600	63.2	10	20	39	79	158	316
82	Durham Region	DR 12	82	80	10,600	61.9	8	16	32	65	130	261
83	Durham Region	DR 12	83	80	2,900	56.2	4	7	15	30	59	119

NOTE: Distances to meet specific sound levels are approximate to within +/- 1.5 dBA

TABLE 6.D (CONT.)

S.S. WILSON AND ASSOCIATES
NOISE ASSESSMENT STUDY
HIGHWAY 404 EXTENSION- DAVIS DRIVE TO HIGHWAY 12
FOR COLE, SHERMAN AND ASSOCIATES
LOW VOLUME ROADWAYS

File : 404cont1.xls

ROAD AND TRAFFIC DATA			DISTANCE IN METRES TO MEET SHOWN Leq					
POSTED SPEED	AADT or SADT	Leq 24 Hr @ 25 m	70	65	60	55	50	45
60	6,000	57	< 15 m	< 15 m	16	31	63	126
60	5,000	56	< 15 m	< 15 m	< 15 m	28	56	113
60	4,000	55	< 15 m	< 15 m	< 15 m	24	49	98
60	3,000	54	< 15 m	< 15 m	< 15 m	21	41	83
60	2,000	52	< 15 m	< 15 m	< 15 m	16	32	65
60	1,000	49	< 15 m	< 15 m	< 15 m	< 15 m	21	43

ROAD AND TRAFFIC DATA			DISTANCE IN METRES TO MEET SHOWN Leq					
POSTED SPEED	AADT or SADT	Leq 24 Hr @ 25 m	70	65	60	55	50	45
80	6,000	59	< 15 m	< 15 m	23	46	92	185
80	5,000	59	< 15 m	< 15 m	21	41	83	166
80	4,000	58	< 15 m	< 15 m	18	36	72	145
80	3,000	56	< 15 m	< 15 m	15	30	61	122
80	2,000	55	< 15 m	< 15 m	< 15 m	24	47	95
80	1,000	52	< 15 m	< 15 m	< 15 m	16	31	63

Notes:

1. Traffic data based on 2 % Heavy trucks and 2% Medium Trucks
2. Distances below 15 m and greater than 500 m are not very accurate
3. The accuracy of the contour levels, in general, is within +/- 1.5 dBA
4. Distances are measured from the road centre line.

TABLE 7.D

APPENDIX E

RANKING OF THE ALTERNATIVE ROUTES

**POPULATION COUNT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12**

ROUND 1

NOISE LEVEL	NUMBER OF RESIDENCES IMPACTED					
	FROM PT. 3	TO PT. 4	FROM PT. 4	TO PT. 6	FROM PT. 8	TO PT. 9
	B1B	B1C	B3A	B3B	B-NORTH	B-SOUTH
55-60 dBA	1	1	1	5	134	66
60-65 dBA	8	3	0	4	33	3
65-70 dBA	0	0	0	1	21	0
70-75 dBA	0	0	0	0	0	0
75+ dBA	0	0	0	0	0	0

NOISE LEVEL	NUMBER OF RESIDENCES IMPACTED				
	FROM PT. 9 TO PT. 13				
	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
55-60 dBA	12	8	30	9	9
60-65 dBA	0	5	5	2	3
65-70 dBA	0	0	0	0	0
70-75 dBA	0	0	0	0	0
75+ dBA	0	0	0	0	0

NOISE LEVEL	NUMBER OF RESIDENCES IMPACTED	
	FROM PT. 10	TO PT. 11
	C1	C2
55-60 dBA	9	4
60-65 dBA	2	5
65-70 dBA	1	0
70-75 dBA	0	0
75+ dBA	0	0

TABLE 1.E

**POPULATION COUNT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12**

ROUND 1

NOISE LEVEL	NUMBER OF RESIDENCES IMPACTED				
	FROM PT. 12 TO PT. 13				
	D2C\E1	D2D\E1	D2D\E2	D2E\E1	D2E\E2
55-60 dBA	11	8	29	7	29
60-65 dBA	0	3	7	2	4
65-70 dBA	0	0	0	0	0
70-75 dBA	0	0	0	0	0
75+ dBA	0	0	0	0	0

NOISE LEVEL	NUMBER OF RESIDENCES IMPACTED	
	FROM PT. 14 TO PT. 15	
	D2A-NORTH	D2A-SOUTH
55-60 dBA	3	2
60-65 dBA	0	0
65-70 dBA	0	0
70-75 dBA	0	0
75+ dBA	0	0

Note: The population count was provided by Cole, Sherman & Associates.

TABLE 1.E (CONTD.)

S.S. WILSON AND ASSOCIATES

NOISE IMPACT COMPARISONS BASED ON POPULATION HIGHLY ANNOYED

2/21/96 0:00

POPULATION COUNT FOR HIGHWAY 404 EXTENSION

S.S. WILSON & ASSOCIATES PROJECT NUMBER :

W95-14

Disk Ref. :

.....

SUMMARY OF THE ANALYSIS

Alignment/Section.....	Total Weighted Population Before the Undertaking	Total Weighted Population After the Undertaking	Change in Weighted Population	RANKING BEFORE	RANKING AFTER	Notes
ROUTE : B1B	0.991	0.991		2	2	PT. 3 TO PT. 4
ROUTE : B1C	0.411	0.411		1	1	PT. 3 TO PT. 4
ROUTE: B3A	0.064	0.064		1	1	PT. 4 TO PT. 6
ROUTE: B3B	0.976	0.976		2	2	PT. 4 TO PT. 6
ROUTE : B-NORTH	13.913	16.435	2.522	2	2	PT. 8 TO PT. 9
ROUTE : B-SOUTH	4.545	4.545		1	1	PT. 8 TO PT. 9

TABLE 2.E

S.S. WILSON AND ASSOCIATES
NOISE IMPACT COMPARISONS BASED ON POPULATION HIGHLY ANNOYED
POPULATION COUNT
FOR HIGHWAY 404 EXTENSION

2/21/96 0:00

S.S. WILSON & ASSOCIATES PROJECT NUMBER : W95-14 Disk Ref. :

SUMMARY OF THE ANALYSIS

Alignment/Section.....	Total Weighted Population Before the Undertaking	Total Weighted Population After the Undertaking	Change in Weighted Population	RANKING BEFORE	RANKING AFTER	Notes
ROUTE: D2C\E1	0.763	0.763		1	1	PT. 9 TO PT 13
ROUTE : D2D\E1	1.088	1.088		3	3	PT. 9 TO PT 13
ROUTE : D2E\E1	0.804	0.804		2	2	PT. 9 TO PT 13
ROUTE : D2D\E2	2.487	2.487		2	2	PT. 9 TO PT 13
ROUTE : D2E\E2	0.920	0.920		1	1	PT. 9 TO PT 13

S.S. WILSON AND ASSOCIATES
NOISE IMPACT COMPARISONS BASED ON POPULATION HIGHLY ANNOYED
POPULATION COUNT
FOR HIGHWAY 404 EXTENSION

2/21/96 0:00

S.S. WILSON & ASSOCIATES PROJECT NUMBER : W95-14 Disk Ref. :

SUMMARY OF THE ANALYSIS

Alignment/Section.....	Total Weighted Population Before the Undertaking	Total Weighted Population After the Undertaking	Change in Weighted Population	RANKING BEFORE	RANKING AFTER	Notes
ROUTE : C1	0.999	0.999		2	2	PT. 10 TO PT. 11
ROUTE : C2	0.834	0.834		1	1	PT. 10 TO PT. 11

TABLE 4.E

S.S. WILSON AND ASSOCIATES
NOISE IMPACT COMPARISONS BASED ON POPULATION HIGHLY ANNOYED
POPULATION COUNT
FOR HIGHWAY 404 EXTENSION

2/21/96 0:00

S.S. WILSON & ASSOCIATES PROJECT NUMBER : W95-14 Disk Ref. :

SUMMARY OF THE ANALYSIS

Alignment/Section.....	Total Weighted Population Before the Undertaking	Total Weighted Population After the Undertaking	Change in Weighted Population	RANKING BEFORE	RANKING AFTER	Notes
ROUTE : D2C\E1	0.700	0.700		2	2	PT. 12 TO PT 13
ROUTE : D2D\E1	0.856	0.856		3	3	PT. 12 TO PT 13
ROUTE : D2E\E1	0.677	0.677		1	1	PT. 12 TO PT 13
ROUTE : D2D\E2	2.656	2.656		2	2	PT. 12 TO PT 13
ROUTE : D2E\E2	2.308	2.308		1	1	PT. 12 TO PT 13

S.S. WILSON AND ASSOCIATES
 NOISE IMPACT COMPARISONS BASED ON POPULATION HIGHLY ANNOYED
 POPULATION COUNT
 FOR HIGHWAY 404 EXTENSION

2/21/96 0:00

S.S. WILSON & ASSOCIATES PROJECT NUMBER : W95-14 Disk Ref. :

SUMMARY OF THE ANALYSIS

Alignment/Section.....	Total Weighted Population Before the Undertaking	Total Weighted Population After the Undertaking	Change in Weighted Population	RANKING BEFORE	RANKING AFTER	Notes
ROUTE : D2A\NORTH	0.191	0.191		2	2	PT. 14 TO PT. 15
ROUTE : D2A\SOUTH	0.127	0.127		1	1	PT. 14 TO PT. 15

TABLE 6.E

SAMPLE SOUND LEVELS ANALYSIS TABLE

INDICATOR		NORTH					SOUTH				
		Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative					Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				
		1-5	6-10	11-15	>15		1-5	6-10	11-15	>15	
1 Potential to increase noise levels at adjacent receivers	Leq (4)										
	<45-50 dBA	10	150	45	1		13	31	23	10	
	51-55 dBA	12	123	1			9	5			
	56-60 dBA	4	0	0			2				
	61-65 dBA										
	66-70 dBA										
TOTAL						2					2
The north route has greater noise impacts											

APPENDIX F

SOUND LEVEL RESULTS OF THE PREFERRED ROUTE

**THE NUMBER OF HOUSES REPRESENTED
BY SELECTED RECEPTOR**

RECEPTOR NO.	NUMBER OF HOUSES REPRESENTED
1R1	2
1R2	1
1R3	1
1R4	6+
1R5	1
1R6	1
1R7	6
1R8	1
1R9	4
1R10	2
1R11	1
1R12	3
1R13	3
1R14	1
1R15	1
1R16	2
1R17	1
1R18	2
1R19	1

TABLE 1.F

TABLE 2.F

[illegible]

Impact Assessment Rating :	0 to < 3 dB change : Insignificant	=> 5 to < 10 dB change : Significant
	=> 3 to < 5 dB change : Noticeable	=> 10 dB change : Very Significant

**THE NUMBER OF HOUSES REPRESENTED
BY SELECTED RECEPTOR**

RECEPTOR NO.	NUMBER OF HOUSES REPRESENTED
2R1	5
2R2	1
2R3	1
2R4	1
2R5	2
2R6	1
2R7	Assumed displaced
2R8	1
2R9	1
2R10	1
2R11	4
2R12	2
2R13 ⁽¹⁾	12
2R14	1
2R15	3
2R16	Assumed displaced
2R17	2
2R18	2

⁽¹⁾ 2R13 represents The Pollock Estate subdivision

TABLE 3.F

TABLE 4.F
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404
FROM BOAG SIDEROAD TO WARDEN AVENUE
GROUP NO. 2

[illegible]

Impact Assessment Rating :

	0 to < 3 dB change : Insignificant	=> 5 to < 10 dB change : Significant
Mean	=>3 to < 5 dB change : Noticeable	=> 10 dB change : Very Significant

**THE NUMBER OF HOUSES REPRESENTED
BY SELECTED RECEPTOR**

RECEPTOR NO.	NUMBER OF HOUSES REPRESENTED
3R1	1
3R2	1
3R3	1
3R4	6
3R5	6
3R6 ⁽¹⁾	34
3R7	1
3R8	Assumed displaced
3R9	1
3R10	6
3R11	2
3R12	Assumed displaced
3R13	2
3R14	2
3R15	2
3R16	1
3R17	1
3R18	1
3R19	1
3R20	2

⁽¹⁾ Elm Grove Trailer Park (1st two rows and residences along Catering Road)

TABLE 5.F

TABLE 6.F
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404
FROM WARDEN AVENUE TO STONEY BATTER ROAD
GROUP NO. 3

[illegible]

Impact Assessment Rating :	0 to < 3 dB change : Insignificant => 3 to < 5 dB change : Noticeable	=> 5 to < 10 dB change : Significant => 10 dB change : Very Significant
----------------------------	--	--

**THE NUMBER OF HOUSES REPRESENTED
BY SELECTED RECEPTOR**

RECEPTOR NO.	NUMBER OF HOUSES REPRESENTED
4R1	3
4R2	2
4R3	1
4R4	8
4R5	1
4R6	1
4R7	Assumed displaced
4R8 ⁽¹⁾	24
4R9	1
4R10	1
4R11	1
4R12	1
4R13	1
4R14	1
4R15	1
4R16	1
4R17	2
4R18	Assumed displaced

⁽¹⁾ Summer Breeze Trailer Park; one half of total sites.

TABLE 7.F

TABLE 8.F
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404
FROM STONY BATTER ROAD TO HIGHWAY 48/12
GROUP NO. 4

[illegible]

Impact Assessment Rating :

0 to < 3 dB change :	Insignificant
=> 3 to < 5 dB change :	Noticeable
=> 5 to < 10 dB change :	Significant
=> 10 dB change :	Very Significant

**THE NUMBER OF HOUSES REPRESENTED
BY SELECTED RECEPTOR**

RECEPTOR NO.	NUMBER OF HOUSES REPRESENTED
5R1	3
5R2	2
5R3	3
5R4	8
5R5	8
5R6	13
5R7	15
5R8	72
5R9	6
5R10	10
5R11	20
5R12	25

TABLE 9.F

TABLE 10.f
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404
FROM PEPPERLAW ROAD TO CNR RAILWAY
GROUP NO. 5

[illegible]

Impact Assessment Rating :

	0 to < 3 dB change : Insignificant	=> 5 to < 10 dB change : Significant
	=>3 to < 5 dB change : Noticeable	=> 10 dB change : Very Significant

TABLE 11.F
SUMMARY OF NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12

Area	NO. OF HOUSES AFFECTED			Opportunity For Noise Control	Type of Mitigation	Rationale/Comments
	0-5 dBA Increase	5-10 dBA Increase	> 10 dBA Increase			
Davis Drive to Green Lane	-	2	-	No	-	Houses are isolated; Mitigation would not be cost-effective
Green Lane to York Regional Road 13	-	-	3	No	-	Houses are isolated; Mitigation would not be cost-effective
York Regional Road 13 to York Regional Road 77	2	-	-	No	-	Excess is less than 5 dBA
	-	6	-	No	-	Excessive barrier height would be required, i.e. technically not feasible
	-	-	1	No	-	House is isolated; Mitigation would not be cost-effective
	7	-	-	No	-	Excess is less than 5 dBA
	-	5	-	No	-	Houses are isolated; Mitigation would not be cost-effective

TABLE 11.F (contd..2)
SUMMARY OF NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12

Area	NO. OF HOUSES AFFECTED			Opportunity For Noise Control	Type of Mitigation	Rationale/Comments
	0-5 dBA Increase	5-10 dBA Increase	> 10 dBA Increase			
York Regional Road 77 to York Regional Road 32	1	-	-	No	-	Excess less than 5 dBA
	-	3	-	No	-	Houses are isolated; Mitigation would not be cost-effective
	-	5	-	Yes	Sound Barrier Wall	Houses are too far away for mitigation to be cost-effective
	-	-	5	No	-	Houses are isolated; Mitigation would not be cost-effective
York Regional Road 32 to York Regional Road 8	-	1	-	No	-	House is isolated; Mitigation would not be cost-effective
	-	-	3	No	-	Houses are isolated; Mitigation would not be cost-effective
	-	-	12	Yes	Sound Barrier Wall on Ramp	Sound Barrier is technically feasible and may be economically viable. Subdivision layout could be altered in the future to accommodate the Ramp.
	-	-	-	-	-	-

TABLE 11.F (contd. ...3)
SUMMARY OF NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12

Area	NO. OF HOUSES AFFECTED			Opportunity For Noise Control	Type of Mitigation	Rationale/Comments
	0-5 dBA Increase	5-10 dBA Increase	> 10 dBA Increase			
York Regional Road 8 to York Regional Road 3	-	1	-	No	-	House is isolated; Mitigation would not be cost-effective
	-	3	-	No	-	Mitigation would not be technically feasible due to excessive barrier height requirements.
	-	-	4	No	-	Houses are isolated; Mitigation would not be cost-effective.
	7	-	-	No	-	Excess less than 5 dBA
York Regional Road 3 to Highway 48	-	6	-	No	-	Houses are too far for mitigation to be effective
	-	2	-	No	-	Future sound level is less than Leq 55 dBA, thus mitigation is not warranted
	-	-	4	No	-	Houses are isolated; Mitigation would not be cost-effective
	-	-	34	Yes	Sound Barrier Wall/Berm	Elm Grove Trailer Park – Technically feasible but economically may be not viable due to excessive barrier length requirement
Highway 48 to York Regional Road 18	3	-	-	No	-	Excess is less than 5 dBA
	-	2	-	No	-	Houses are isolated; Mitigation would not be cost-effective
	-	-	2	No	-	Houses are isolated; Mitigation would not be cost effective

TABLE 11.F (contd....4)
SUMMARY OF NOISE IMPACT ASSESSMENT
FOR HIGHWAY 404 EXTENSION
FROM DAVIS DRIVE TO HIGHWAY 12

Area	NO. OF HOUSES AFFECTED			Opportunity For Noise Control	Type of Mitigation	Rationale/Comments
	0-5 dBA Increase	5-10 dBA Increase	> 10 dBA Increase			
York Regional Road 18 to Highway 12	141	-	-	No	-	Excess less than 5 dB; (107 Receptor Locations are within Green Acres Trailer Park)
	-	10	-	No	-	Houses are isolated and future sound levels are less than Leq 55 dBA
	-	26	-	No	-	Future sound levels are less than Leq 55 dBA
	-	7	-	No	-	Houses are isolated; Mitigation would not be cost-effective
	-	8	-	Yes	Sound Barrier Wall	Pefferlaw Estates Subdivision did not receive Draft Plan approval, thus mitigation is not an MTO responsibility
	-	28	-	Yes	Sound Barrier Wall/Berm	Green Acres Trailer Park - Mitigation is technically feasible but economically probable
	-	24	-	Yes	Sound Barrier Wall/Berm	Summer Breeze Trailer Park - Mitigation is technically feasible but economically probable
	-	-	3	No	-	Houses are isolated; Mitigation would not be cost-effective

APPENDIX 3 NATURAL ENVIRONMENT

3.A Results of Additional Fisheries Field Work

3.B Impact Areas of Preferred Route

APPENDIX 3.A

**RESULTS OF ADDITIONAL
FISHERIES FIELD WORK**

FISHERIES FIELD WORK FOR THE TECHNICALLY PREFERRED ALTERNATIVE

Sampling Methodologies

Fish sampling was conducted in all watercourses and roadside ditches crossed by the technically preferred route to address potential seasonal use of these areas by fish from larger downstream systems, including Lake Simcoe. A backpack electrofisher unit was used when water depths ranged from 10 to 50 cm. Watercourses with less than ideal conditions (e.g., water less than 10 cm or choked with dense vegetation) were sampled with a dip net. Water depths greater than 50 cm presented difficulties for electrofishing and were not sampled. For the majority of fishable sampling sites, an average of 50 m of stream channel was electrofished. However, in some cases (e.g., SS1, MR11, BR3), less than 50 m was sampled due to difficult conditions, such as finding a long enough length of fishable habitat.

Spring 1997 sampling dates were as follows: May 16, 19-23 and 26. Late May was selected as the sampling period based on the expectation that if water remained in the tributary at this time of year then opportunities for refuge or spawning use of the watercourse may exist for fish species such as suckers and certain minnow species. Spawning activity itself was not targeted but staging adults were expected to be moving through the waters and possibly YOY (young-of-the-year) pike, having hatched some weeks earlier. In addition, spring habitat observations were made in the Black and Maskinonge Rivers in 1996 to document the extent of potential pike spawning habitat in the floodplains in the vicinity of the technically preferred route crossings.

Drainage Systems

The technically preferred route traverses nine identified drainage systems, six of which are named watercourses (Pefferlaw Brook, Morning Glory Creek, Black River, Maskinonge River, Mount Albert Creek and Holland River). Of the remaining three, two drain through wetland complexes (Sod Swamp and Port Bolster Swamp) and the third drains directly to Lake Simcoe. All un-named tributary systems that drain northward directly to the lake are included in the Lake Simcoe Drainage system. All of these drainage systems have a number of smaller streams, agricultural swales or connecting road ditches feeding into the primary watercourse.

The route also crosses a number of road-side ditches that convey runoff but have no apparent connection to a flowing system or wetland. These have been included in the drainage system evaluation as some of these ditches are known to provide fish habitat in certain locations within the study area.

Crossings assessed within each of these drainage systems were assigned to a drainage system and given a numeric identification (e.g., MR1 - Maskinonge River, station 1).

Habitat Classifications

Using the field information and functional assessment categories of the Fisheries Manual (MTO 1994) criteria were developed to categorize the watercourse crossings into Good, Moderate, Poor or No Habitat for fish.

The major components of **Good Fish Habitat** were considered to be permanent flow with connection to a main river or Lake Simcoe, a well defined channel and the presence of fish. Other considerations included firm substrate, instream cover and that the feature is naturally occurring, as opposed to man-made.

Similar to Good Fish Habitat, both fish presence and connection to a flowing system were main components of **Moderate Fish Habitat**, but the flow regime is considered seasonal not permanent. For example, if snow melt and spring rains are significant, these types of watercourses can provide fish spawning, rearing and possibly nursery habitat but conditions will fluctuate year to year. A particularly dry spring may not provide a tributary with sufficient water, for a long enough period of time, to allow completion of the spawning, hatching, rearing and downstream migration of both adult and young.

Some stations were electrofished, but no fish were collected. Conditions at these stations were often similar to each other, exhibiting no observable flow, having no apparent channel connection to a flowing system and characterized by soft, organic substrate, typically within a poorly defined channel choked with vegetation. Fish sampling was carried out in pooled water which was assumed to possibly act as refuge habitat for minnows. Stations exhibiting these characteristics were considered **Poor Fish Habitat** with the main function being water conveyance with the potential for fish passage and refuge opportunities.

Stations that were dry at the time of sampling were not considered fish habitat (**No Fish Habitat**) as they did not provide one of the primary requisites of fish habitat, namely water in a seasonally significant timeframe. These stations had poorly defined channels, were often grass-lined and had no connection to flowing water. In some cases, water was present but at depths less than 5 cm at time of sampling and contained within isolated pools. It is expected that the channel would become dry in a very short time frame and there was no potential to support fish.

Summary of Field Observations

Exhibits were prepared summarizing the existing field conditions and fish species (Exhibits 1). Of the 66 crossings assessed, 27 fell into the category of No Fish Habitat. These crossings were predominantly dry drainage channels and road ditches choked with vegetation, some with a small amount of water. Many of the channels drained agricultural fields or wetlands.

Eighteen crossings were considered to have poor fish habitat. These channels typically have a weak connection with larger drainage systems, but retained some water with a slight flow. In some cases,

the channels are poorly defined largely due to the presence of dense vegetation. Primary habitat functions of these watercourses are to convey drainage as no fish were collected.

At three crossings considered to have poor habitat (PS2, BR4 and MR12), fish were collected. For station PS2 (a roadside ditch), several species were collected and it is most likely that these fish escaped through an outlet pipe from a nearby pond that had moderate fish habitat. It is not expected that these fish could survive through the summer months in this ditch as it lacked cover, food sources and likely permanent flow. At BR4 and MR12, only two fish (brook stickleback (*Culea inconstans*)) were collected in the channel at each station and it is assumed that they migrated up from the main channels of the Black River and Maskinonge River, respectively, to spawn. These channels are not likely to remain wet throughout the summer thus only providing seasonal fish habitat. Brook stickleback are typically found in ephemeral channels as they are tolerant of the poor conditions. Therefore, although fish were collected at these sites, which is contrary to the classification system established, our observations of the habitat suggested that these sites were slightly anomalous, and were not appropriately classified as having moderate habitat.

Ten crossings were placed in the moderate fish habitat category. At the time of sampling, these moderately defined channels contained flowing water. Electrofishing revealed that most of these channels contained fish although typically only two to three species were collected at a given station. Brook stickleback and central mudminnow (*Umbra limi*) were the most commonly caught species. Other species collected included johnny darter (*Etheostoma nigrum*) in the upper reaches of the Maskinonge River (MR14), rock bass (*Ambloplites rupestris*) and pumpkinseed (*Lepomis gibbosus*) in an abandoned gravel pit pond (BR2), and fathead minnow (*Pimephales promelas*), northern redbelly dace (*Phoxinus eos*) and goldfish (*Carassius auratus*) (GH2) in an artificial pond. The channels through the Maskinonge Swamp (MR7 to MR10) were not sampled because the water was too deep. Although no fish were observed in these channels, our ability to accurately assess fish community conditions was hampered by the water depth and soft substrates.

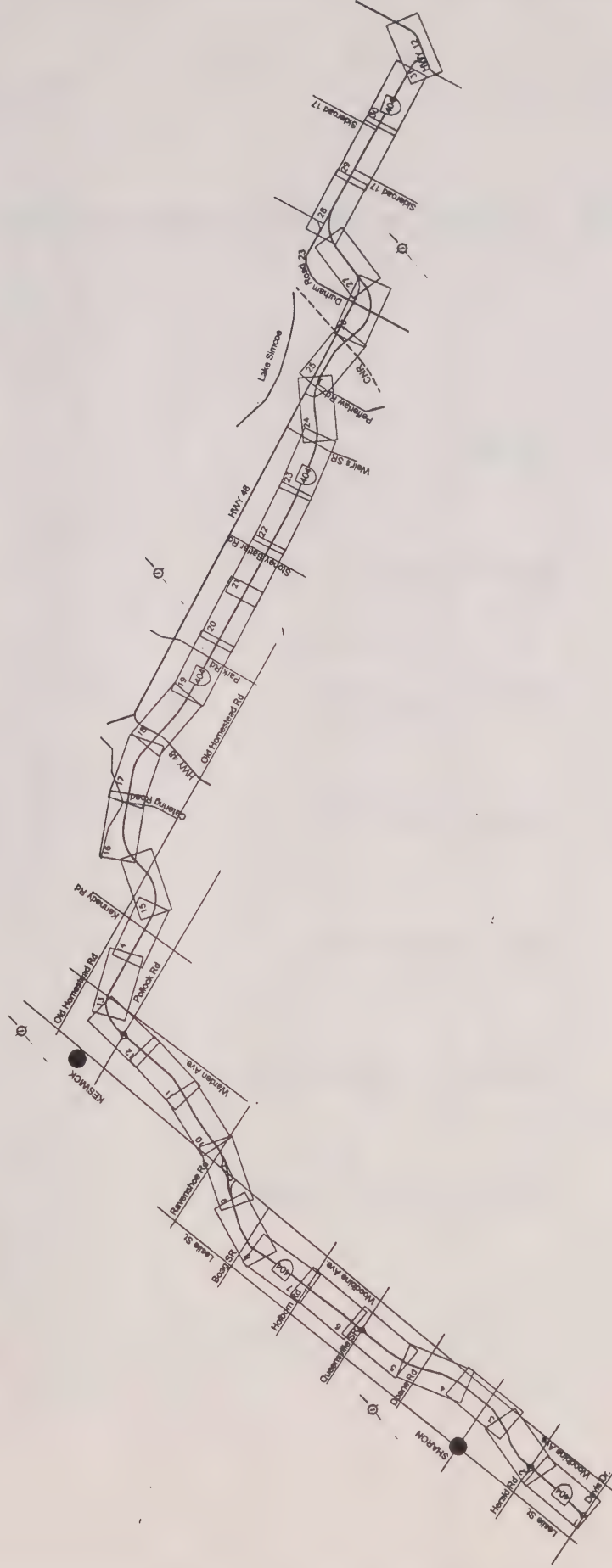
Eleven crossing were classified as good fish habitat. All of these channels have permanent flow, a well defined channel, firm bottom, instream cover, and a strong connection with a larger flowing system or Lake Simcoe. Although similar numbers of species were collected at these stations as those in the moderate category, greater numbers of fish were caught. In addition, young top predator species (juvenile yellow perch (*Perca flavescens*) and young-of-the-year smallmouth bass (*Micropterus dolomieu*)) were also collected at two stations, LS5 and LS9, respectively indicating that fish from Lake Simcoe migrate up these stream to spawn. Mottled sculpins (*Cottus bairdi*) were collected at two stations (MC4 and MR5) suggesting that these streams have the potential to support cold water fisheries.

The potential effects of the highway on these waterbodies is described in Section 5.4.2.1 of the main report.

**APPENDIX 3.B IMPACT AREAS OF
PREFERRED ROUTE**

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12 Route Planning Study and Environmental Assessment



Legend - Natural Environment Impacts



Woodlot



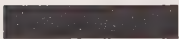
Wooded Swamp



Swamp/Bog/Marsh



Water Course



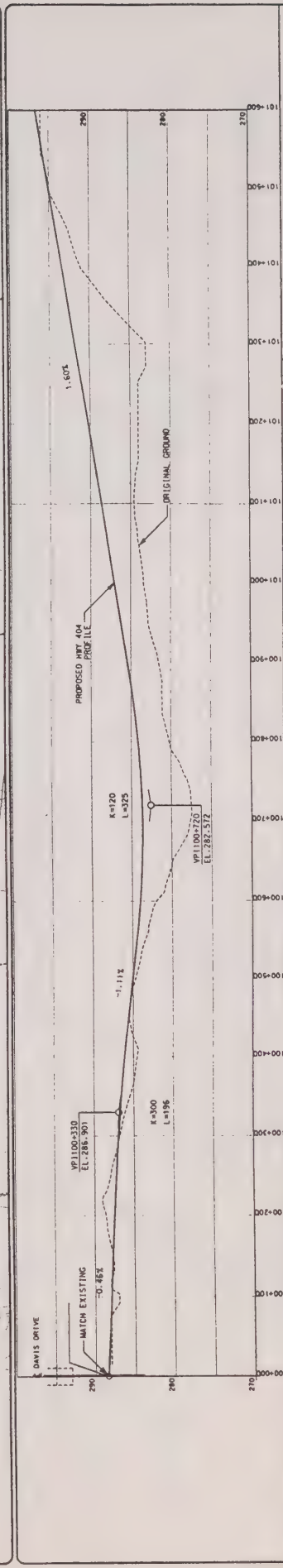
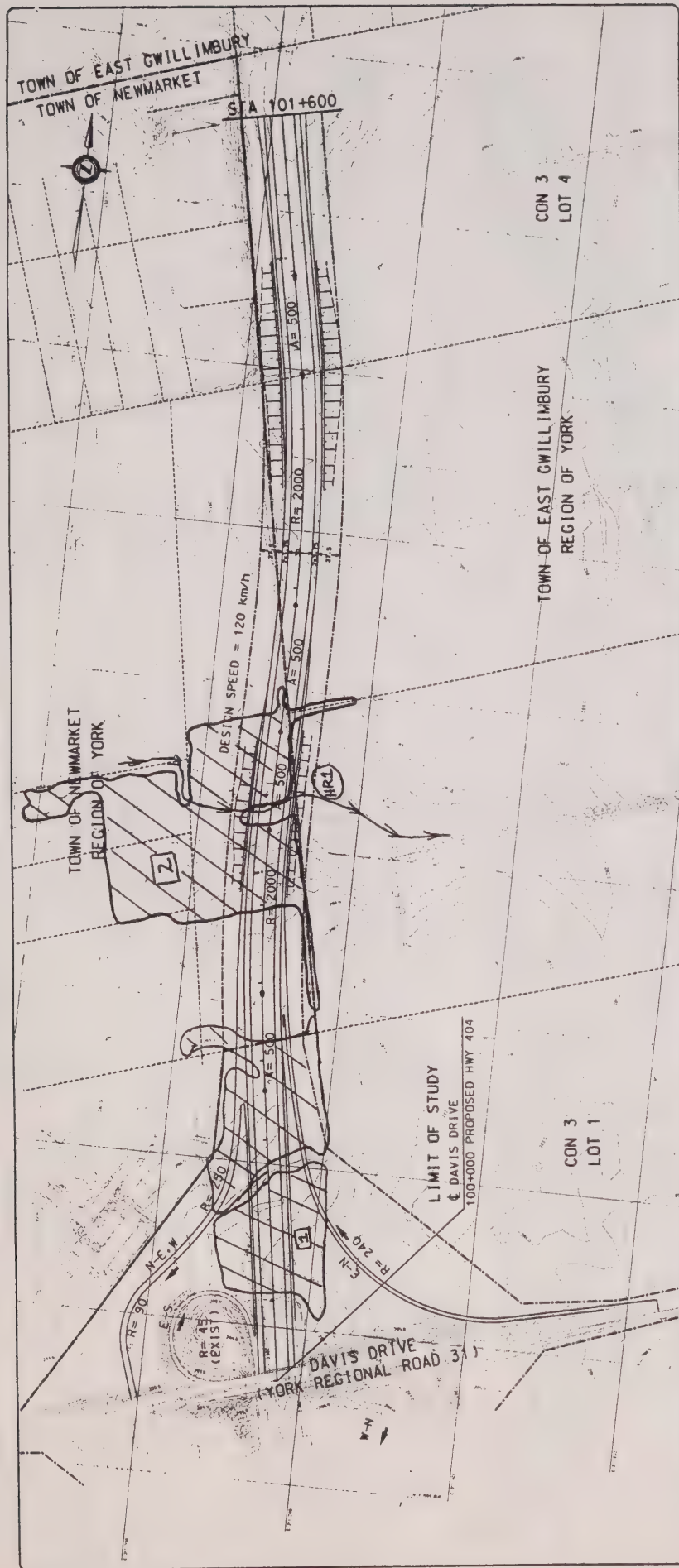
High Impacted Soils



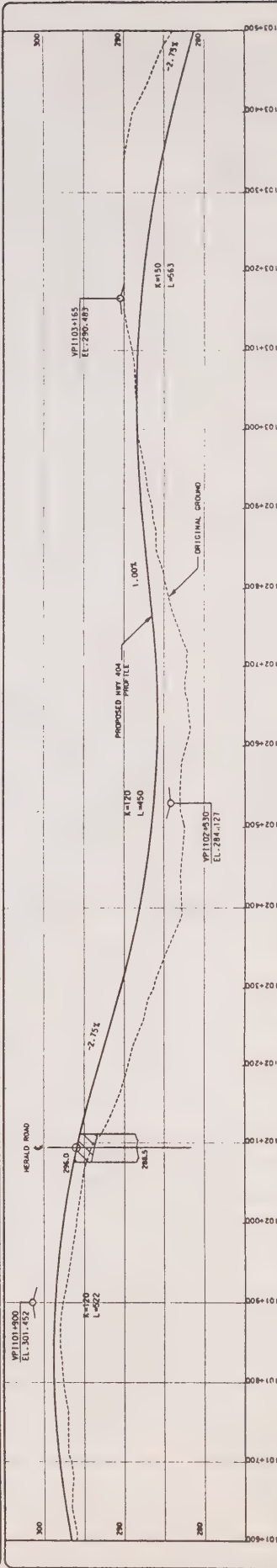
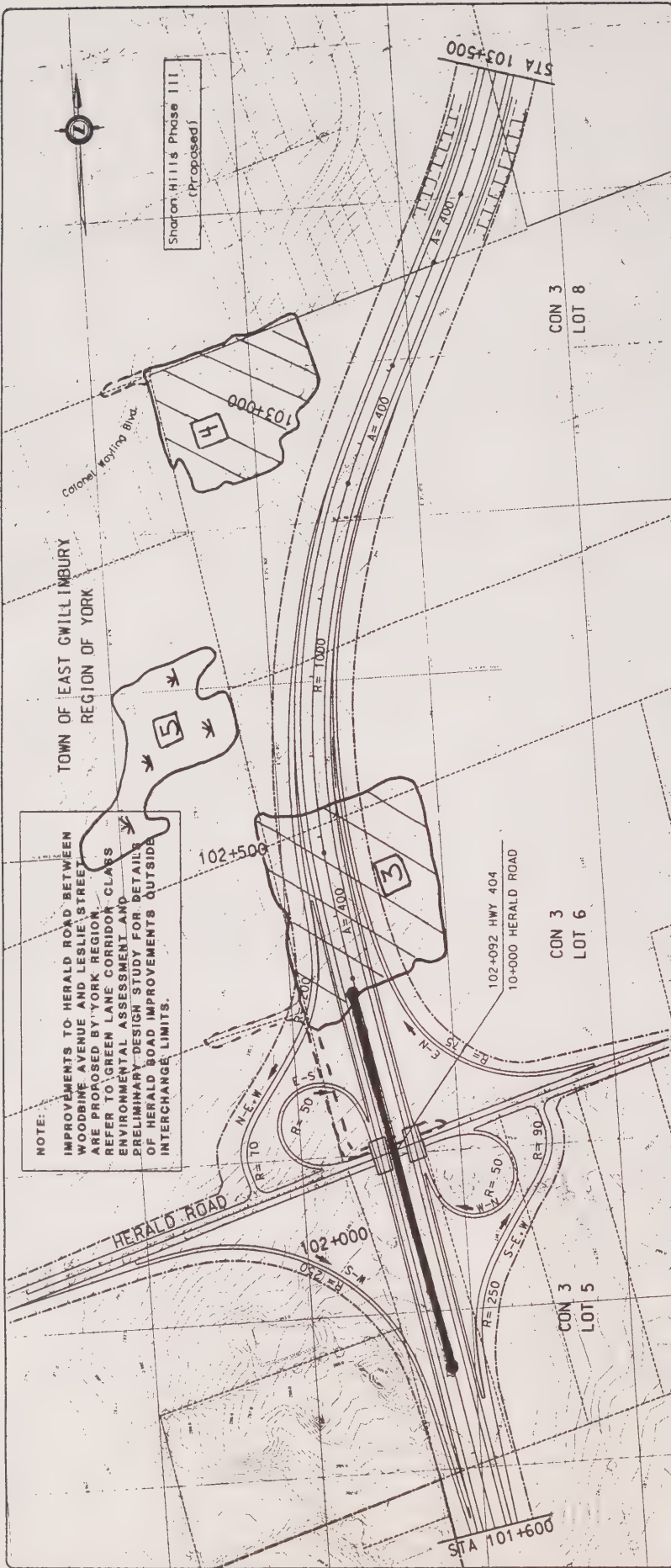
Identified Vegetation Unit



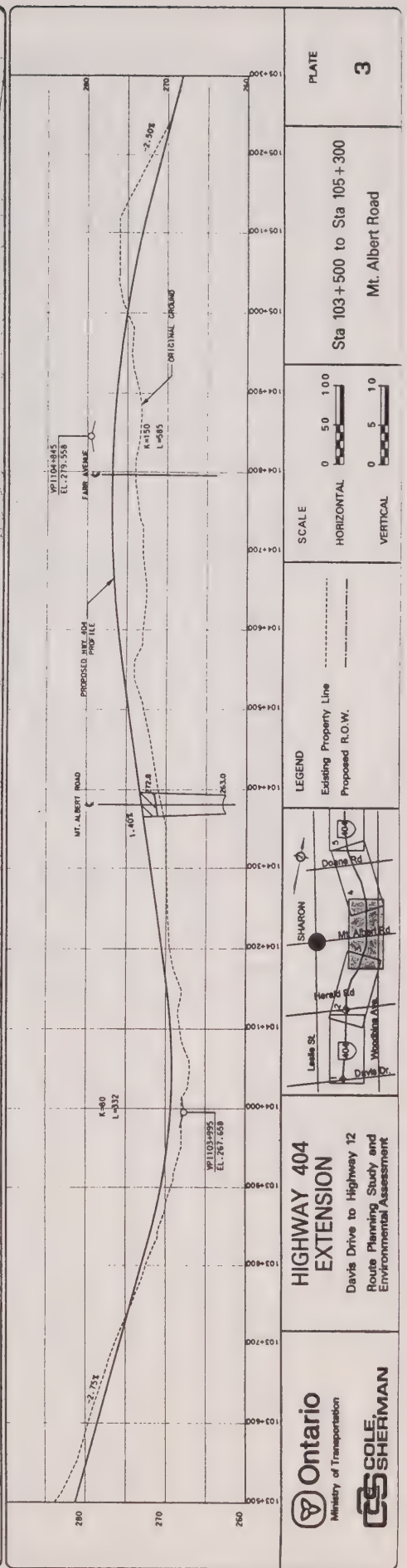
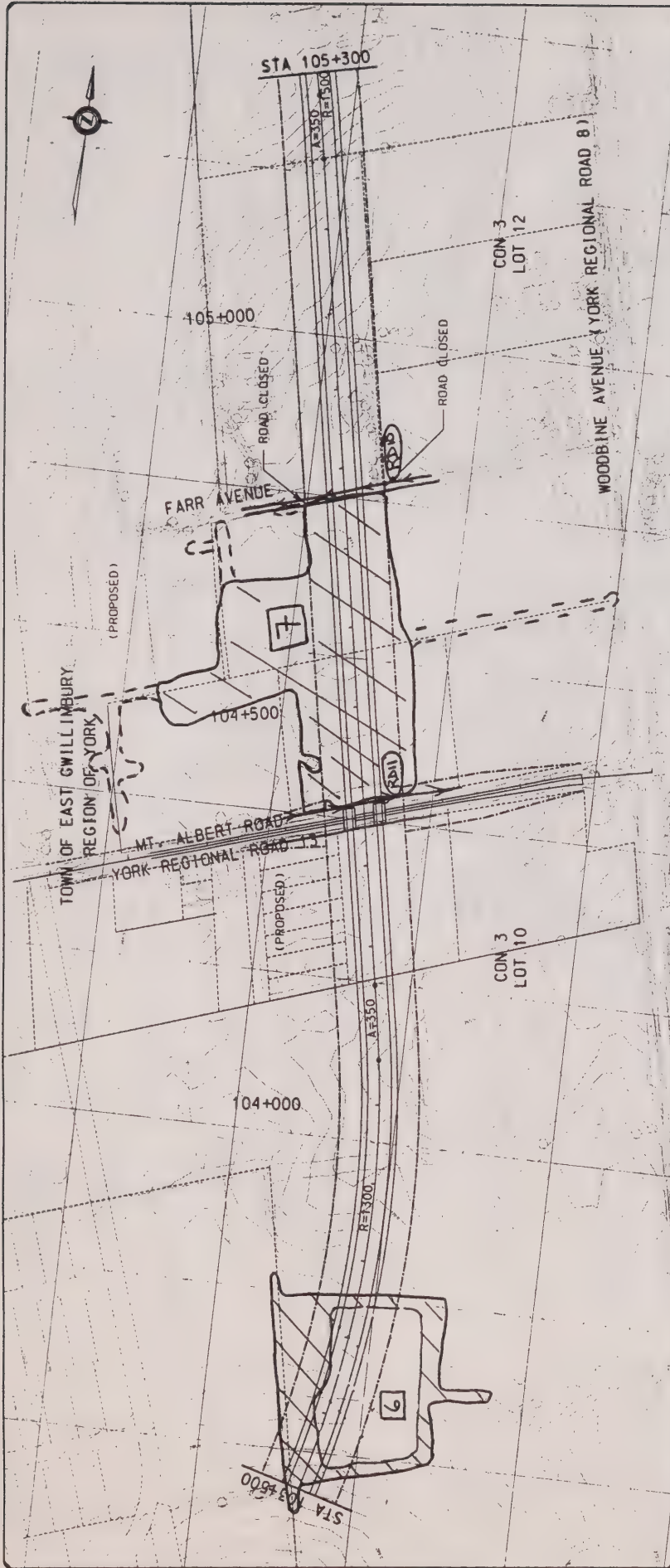
Identified Water Course

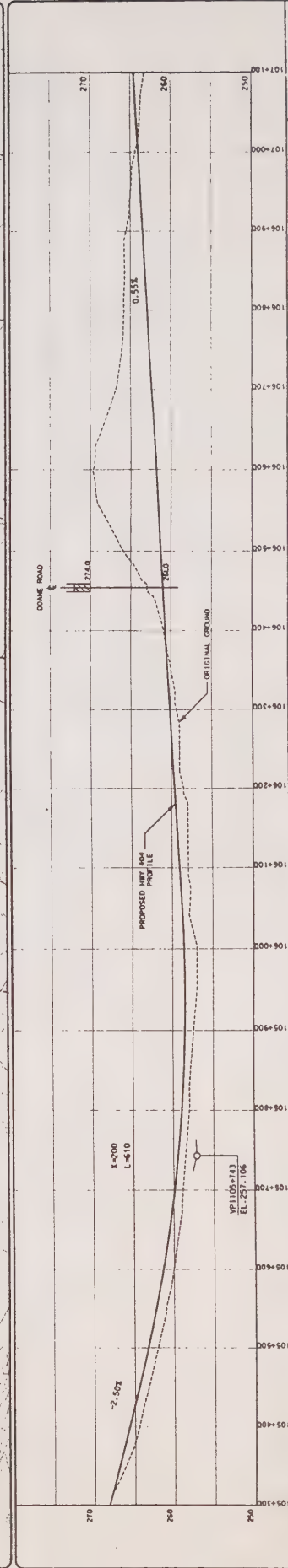
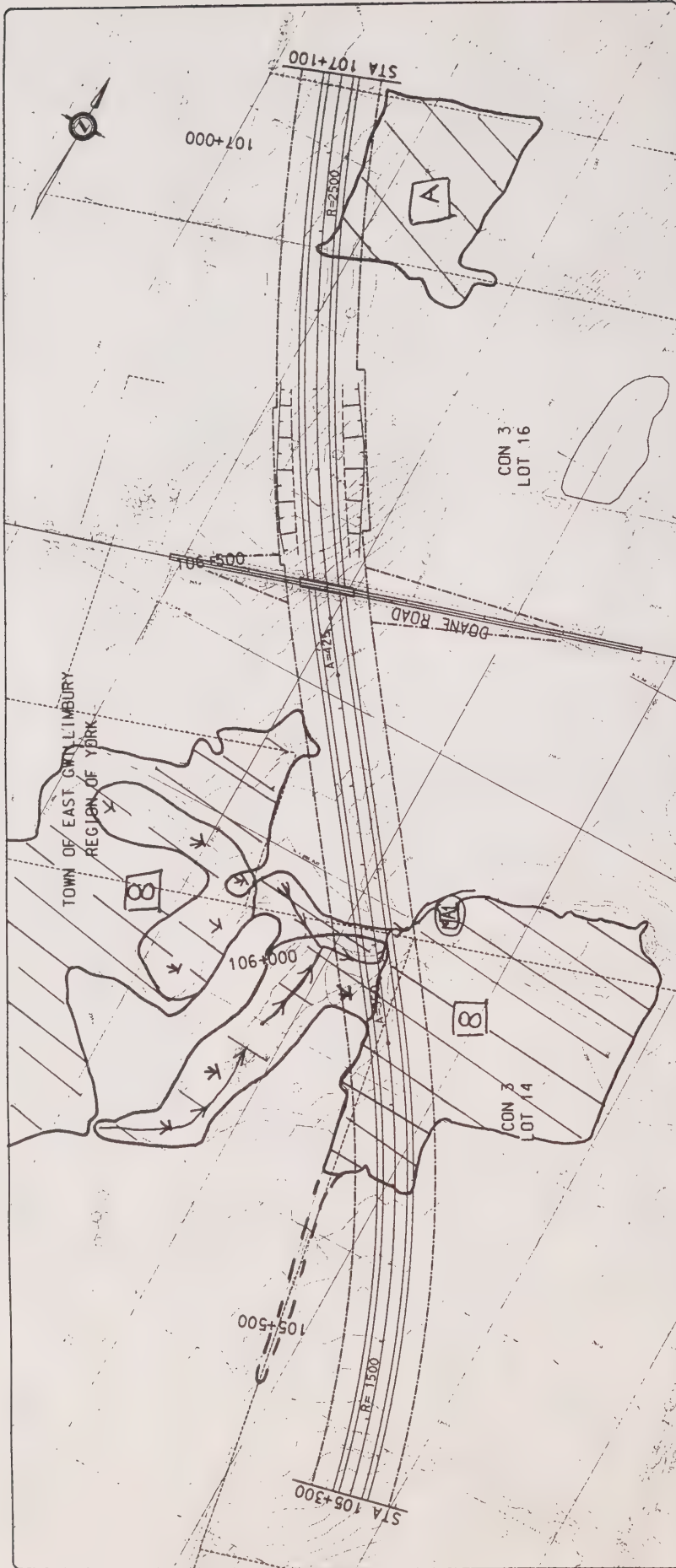


<p>Ontario Ministry of Transportation</p> <p>COLEMAN</p>	<p>HIGHWAY 404 EXTENSION</p> <p>Davis Drive to Highway 12 Route Planning Study and Environmental Assessment</p>	<p>LEGEND</p> <p>Existing Property Line Proposed R.O.W.</p>	<p>SCALE</p> <p>HORIZONTAL 0 50 100</p> <p>VERTICAL 0 5 10</p>	<p>PLATE</p> <p>Sta 100+000 to Sta 101+600 Davis Drive Interchange</p> <p>1</p>
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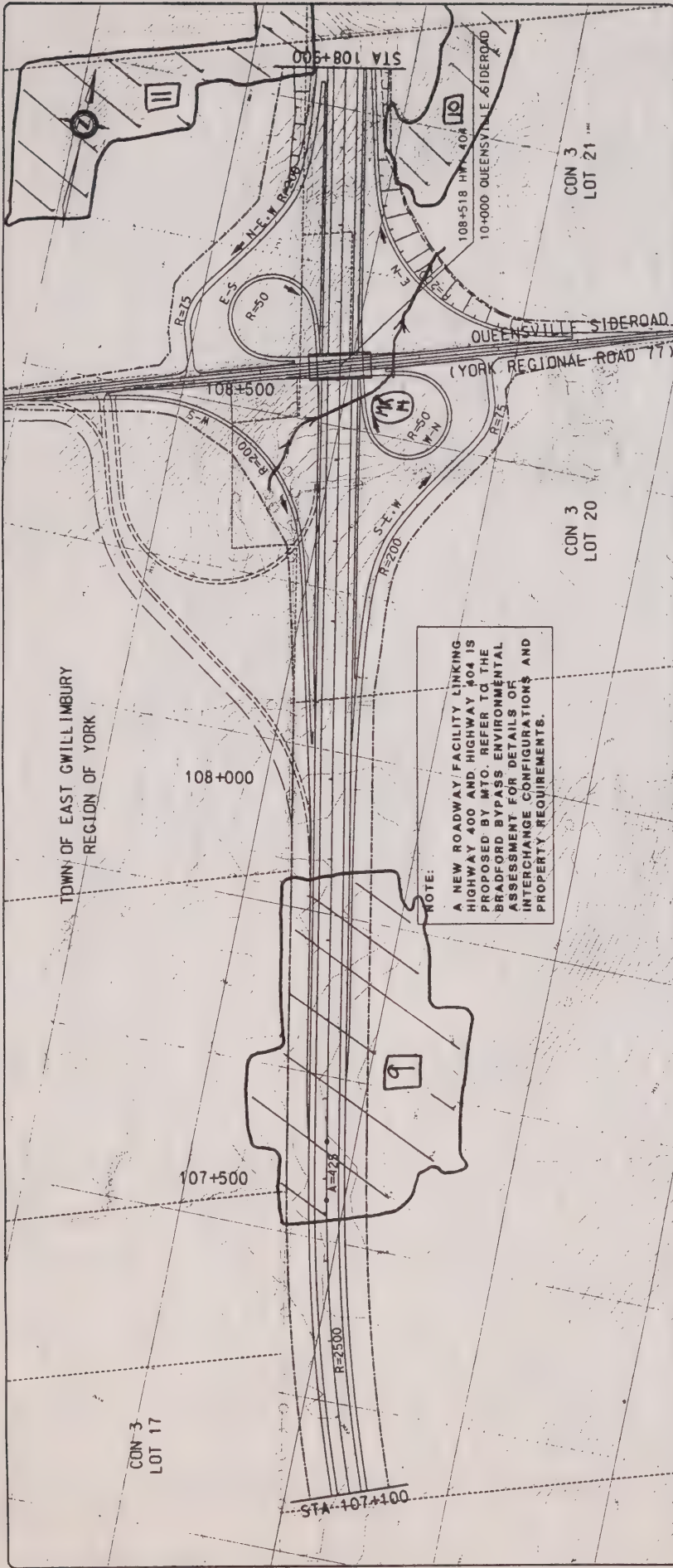


<p>Ontario Ministry of Transportation</p> <p>COLE SHERMAN</p>	<p>HIGHWAY 404 EXTENSION</p> <p>Davis Drive to Highway 12 Route Planning Study and Environmental Assessment</p>	<p>LEGEND</p> <p>Existing Property Line Proposed R.O.W.</p>	<p>SCALE</p> <p>HORIZONTAL 0 50 100</p> <p>VERTICAL 0 5 10</p>	<p>PLATE</p> <p>2</p> <p>Sta 101+600 to Sta 103+500 Herald Road Interchange</p>
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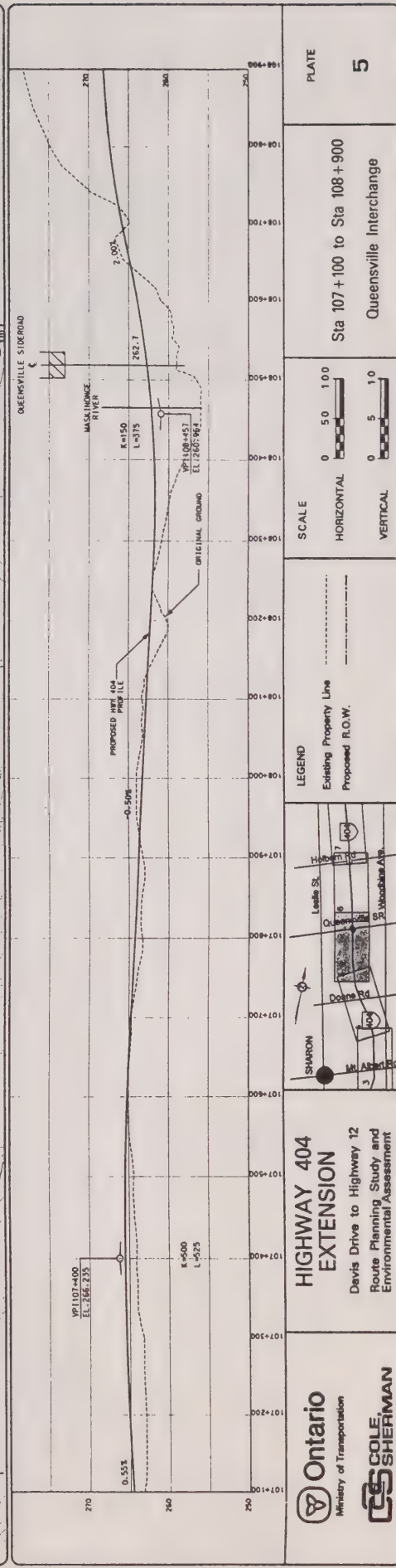




<p>Ontario Ministry of Transportation</p> <p>COLE/SHERMAN</p>	<p>HIGHWAY 404 EXTENSION</p> <p>Davis Drive to Highway 12</p> <p>Route Planning Study and Environmental Assessment</p>		<p>LEGEND</p> <p>Existing Property Line</p> <p>Proposed R.O.W.</p>	<p>SCALE</p> <p>HORIZONTAL: 0 50 100</p> <p>VERTICAL: 0 5 10</p>	<p>Sta 105+300 to Sta 107+100</p> <p>Doane Road</p>	<p>PLATE</p> <p>4</p>
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NOTE:
A NEW ROADWAY/FACILITY LINKING HIGHWAY 404 AND HIGHWAY 404 IS PROPOSED BY MTO. REFER TO THE BRADFORD BYPASS ENVIRONMENTAL ASSESSMENT FOR DETAILS OF INTERCHANGE CONFIGURATIONS AND PROPERTY REQUIREMENTS.



HIGHWAY 404 EXTENSION
Davis Drive to Highway 12
Route Planning Study and Environmental Assessment

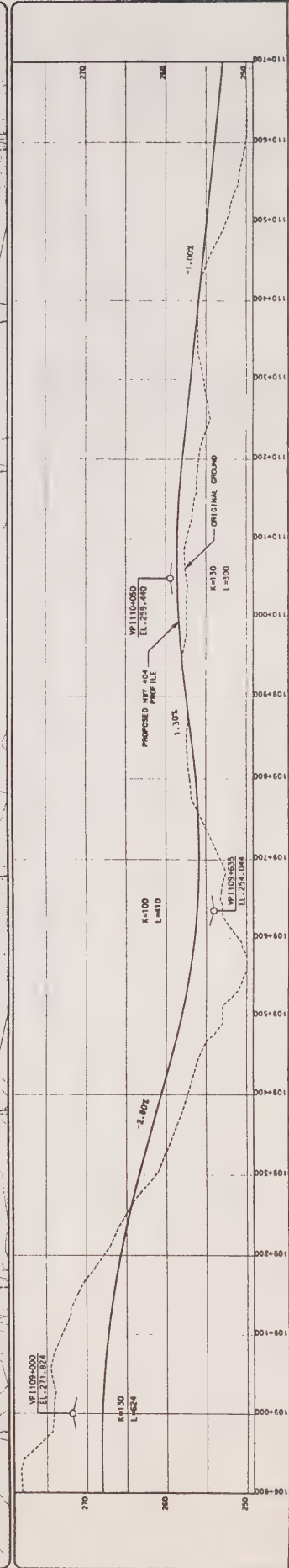
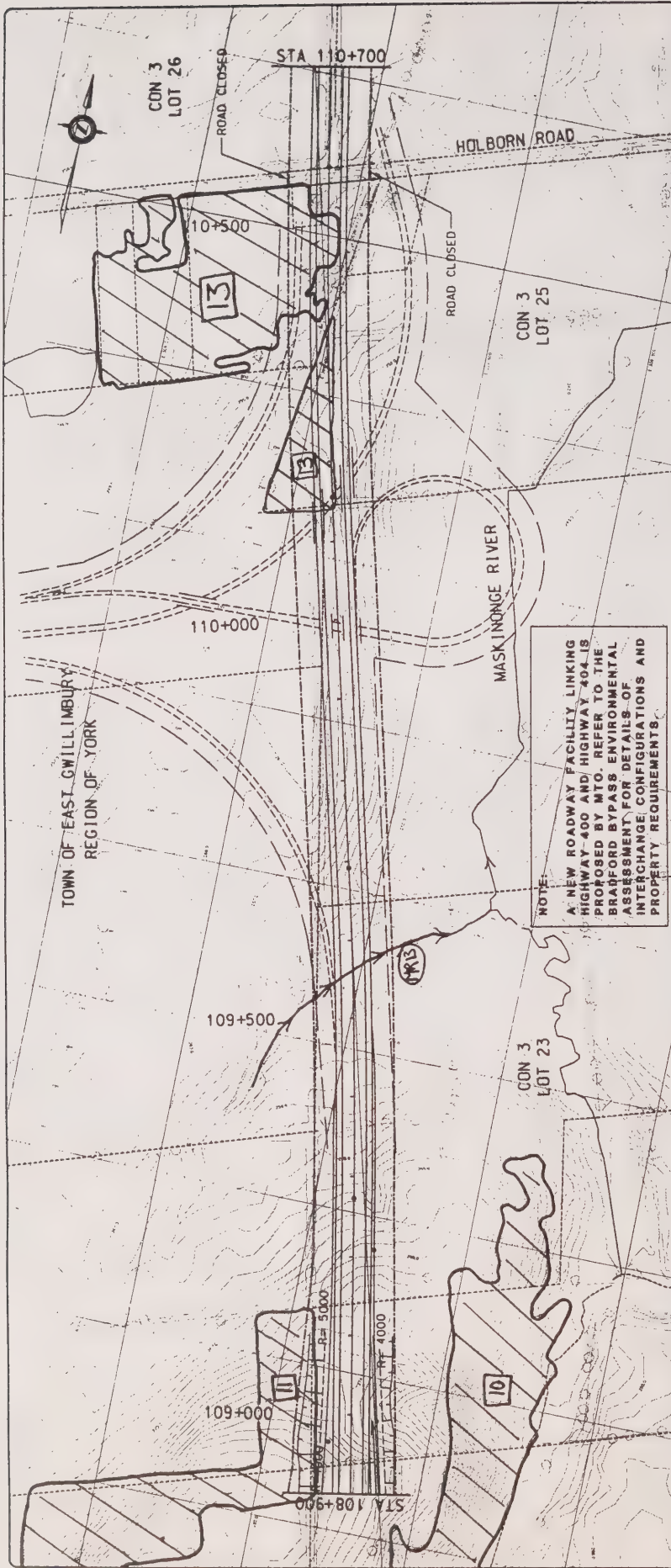
Ontario
Ministry of Transportation
COLE SHEPHERD

LEGEND
Existing Property Line
Proposed R.O.W.

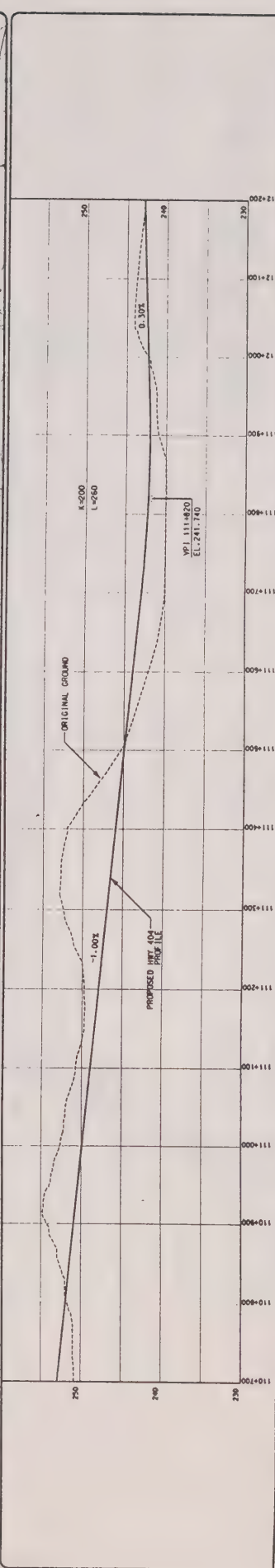
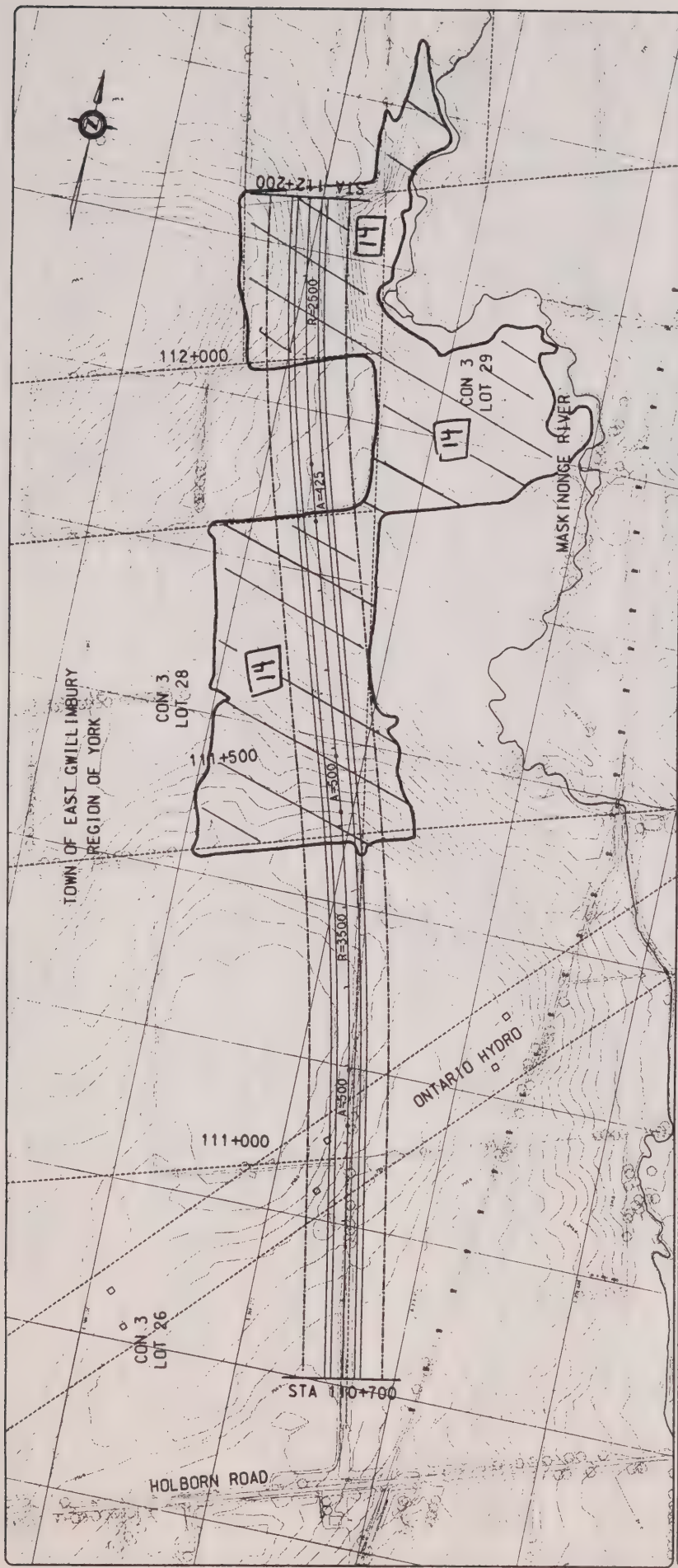
SCALE
HORIZONTAL
VERTICAL

PLATE
Sta 107+100 to Sta 108+900
Queensville Interchange

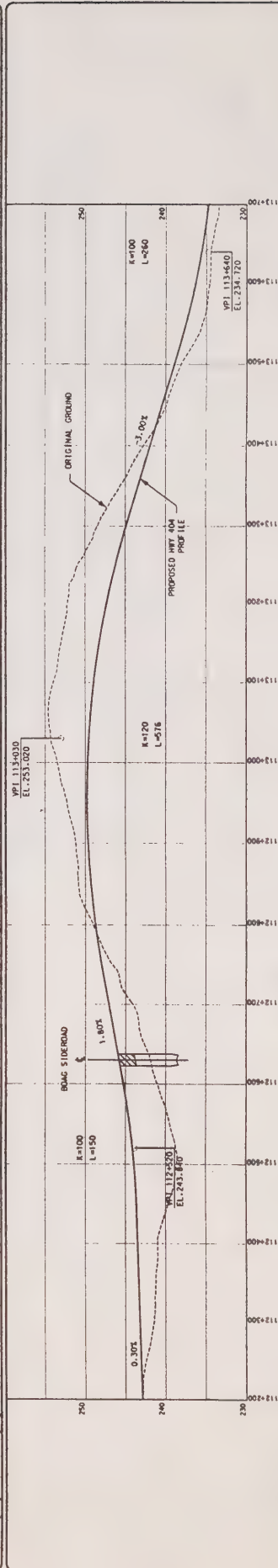
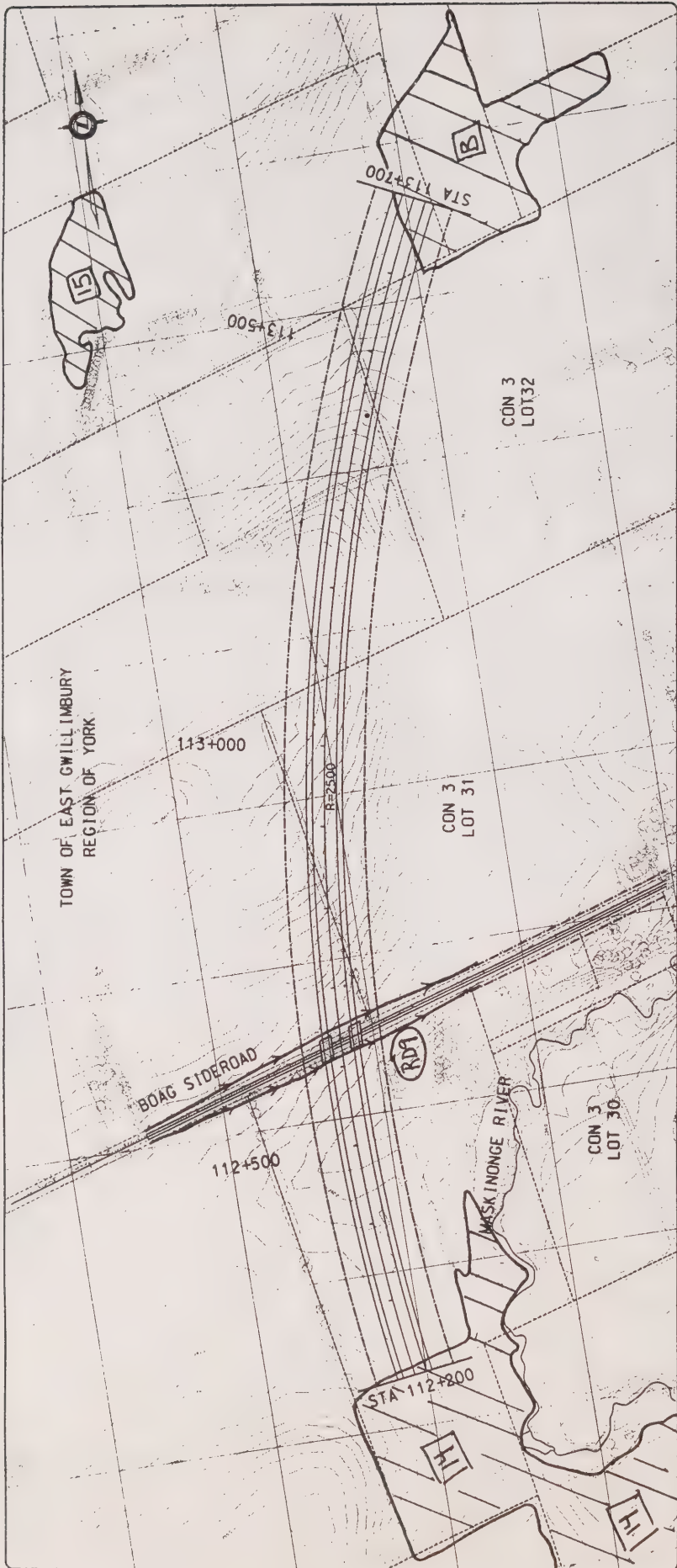
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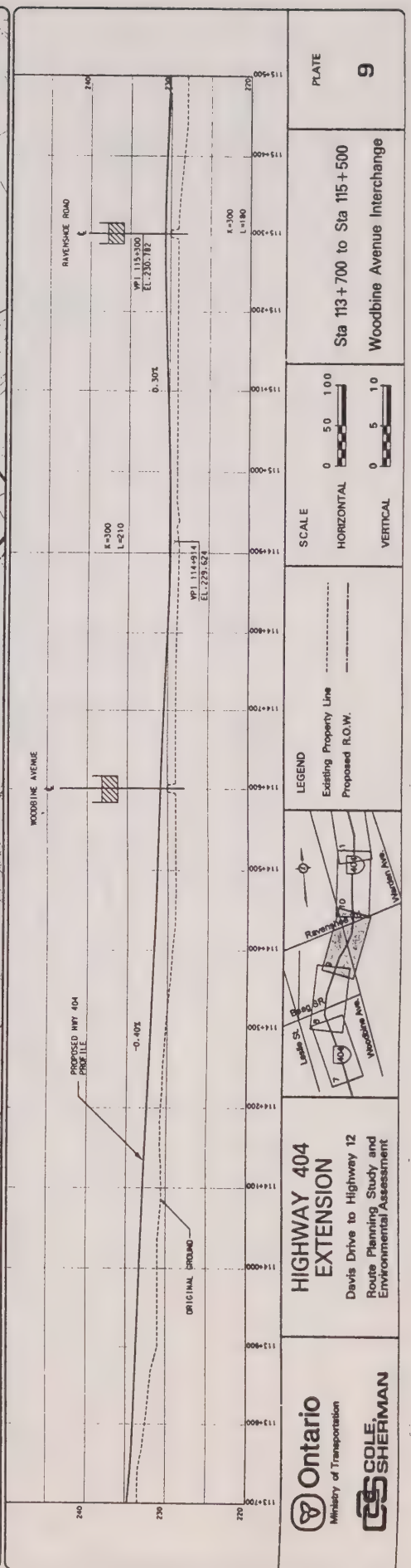
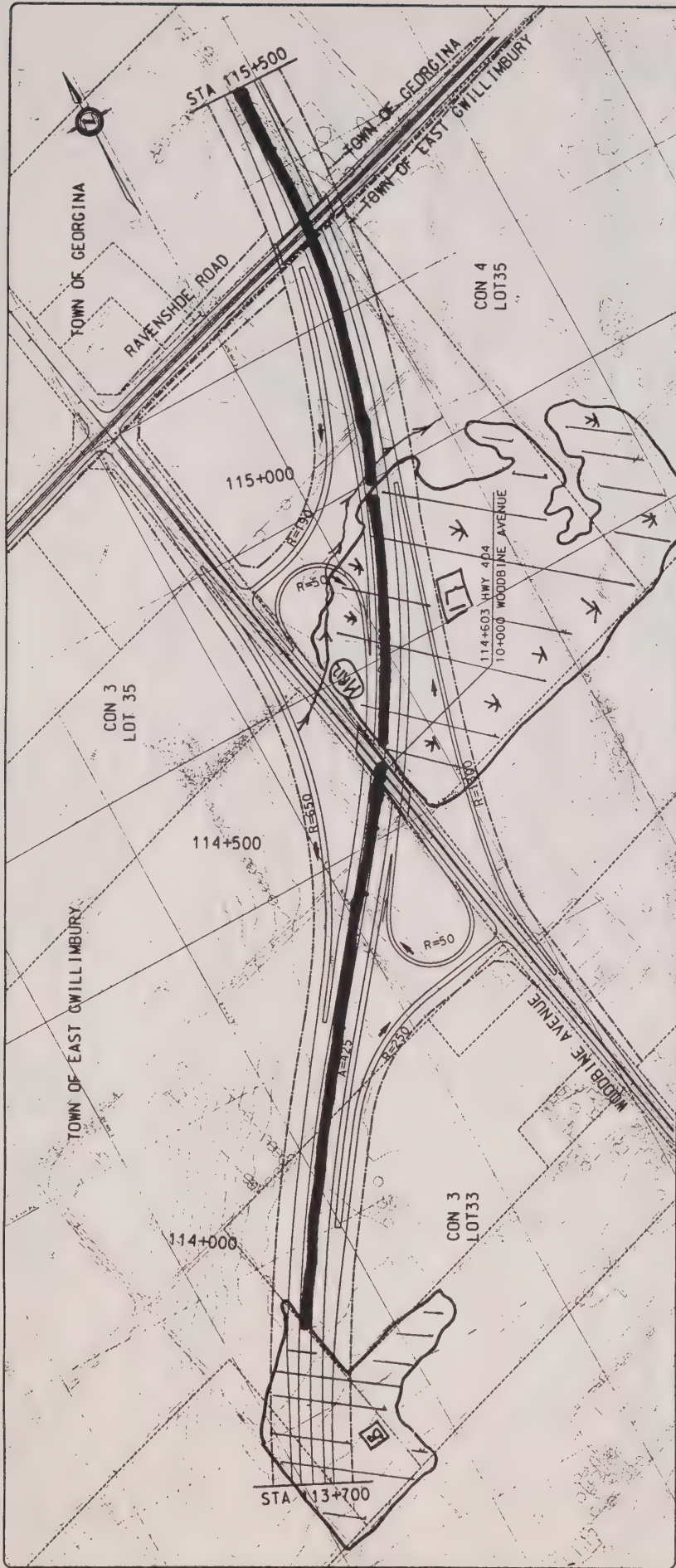
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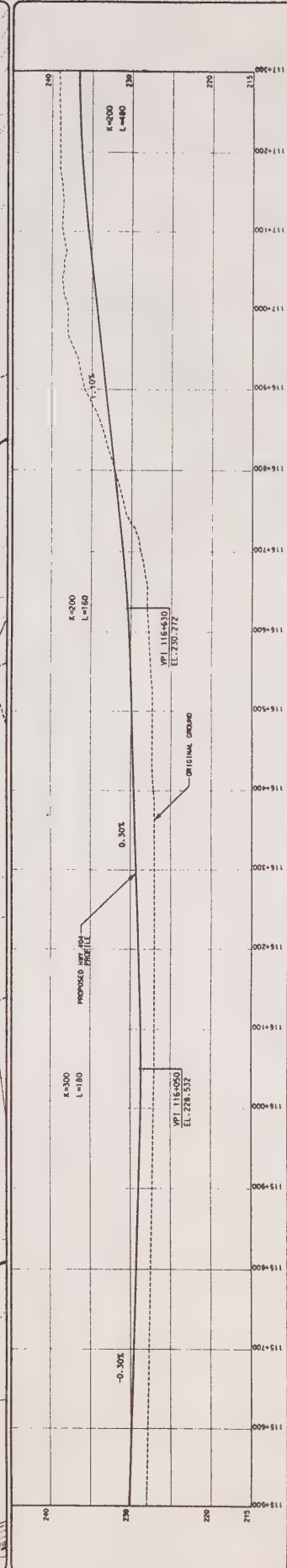


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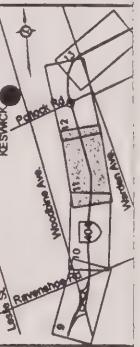
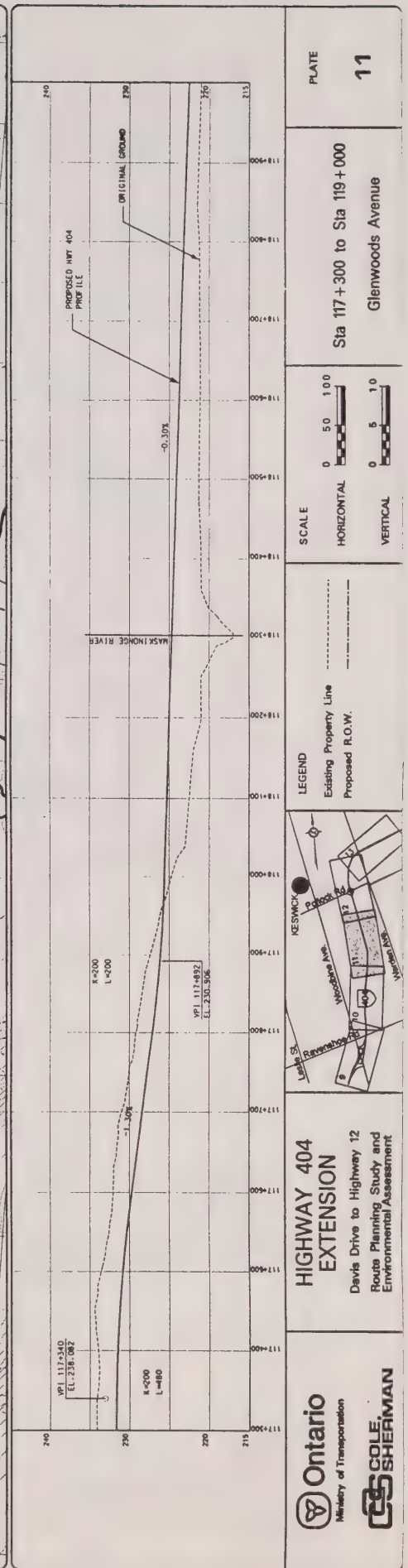


<p>Ontario Ministry of Transportation</p> <p>COLE SHERMAN</p>	<p>HIGHWAY 404 EXTENSION</p> <p>Davis Drive to Highway 12 Route Planning Study and Environmental Assessment</p>	<p>LEGEND</p> <p>Existing Property Line</p> <p>Proposed R.O.W.</p>	<p>SCALE</p> <p>HORIZONTAL</p> <p>0 50 100</p> <p>VERTICAL</p> <p>0 5 10</p>	<p>Sta 112+200 to Sta 113+700</p> <p>Boag Sideroad</p>	<p>PLATE</p> <p>8</p>
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 COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	Sta 115+500 to Sta 117+300	PLATE 10
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LEGEND
 Existing Property Line
 Proposed R.O.W.

SCALE
 HORIZONTAL
 0 50 100
 VERTICAL
 0 5 10

Sta 117+300 to Sta 119+000
 Glenwoods Avenue

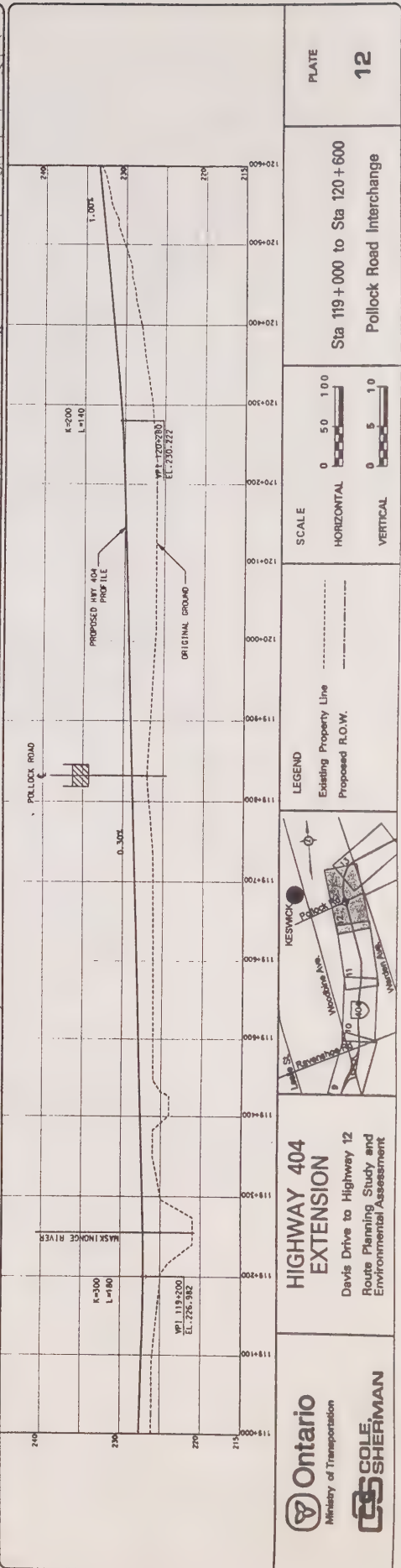
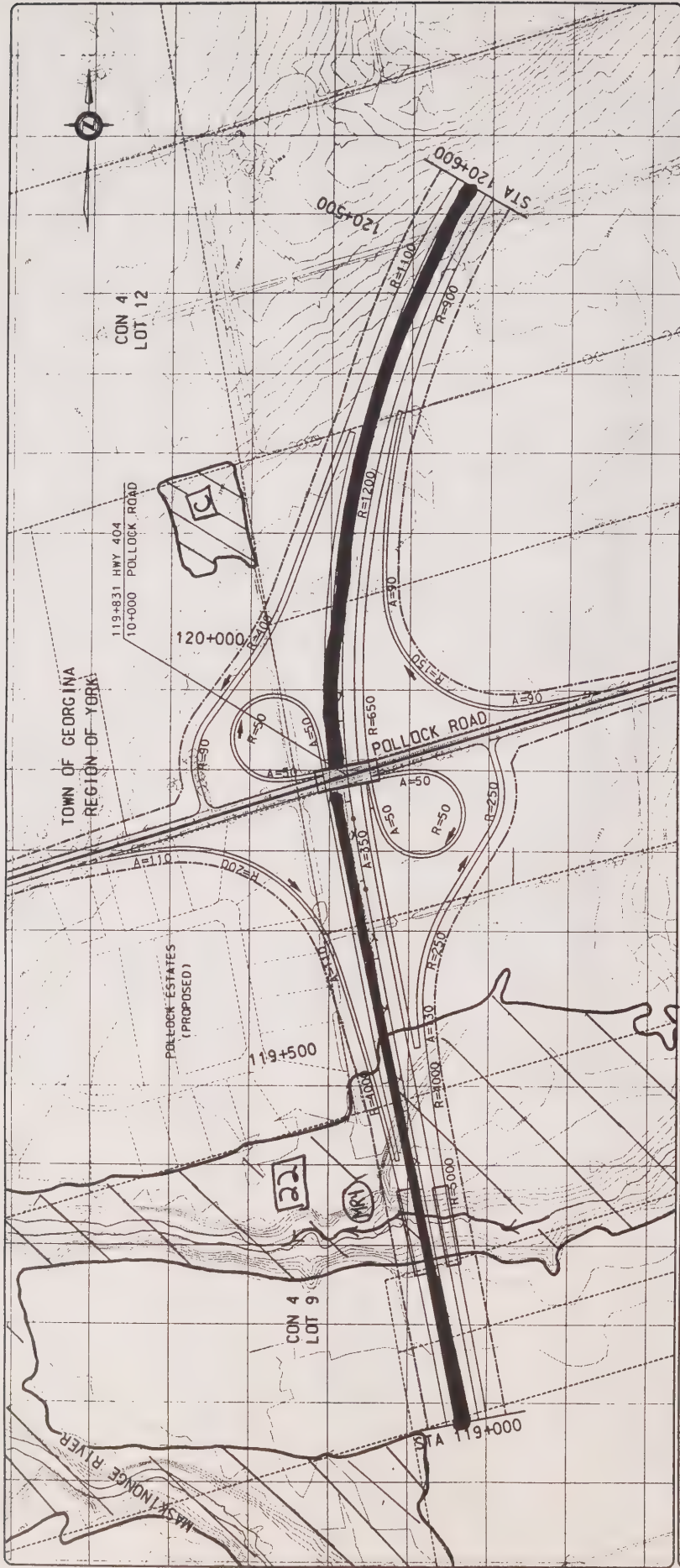
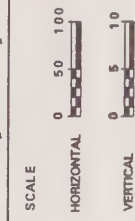
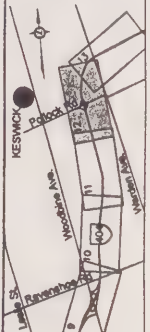


PLATE
12

Sta 119+000 to Sta 120+600
Pollock Road Interchange

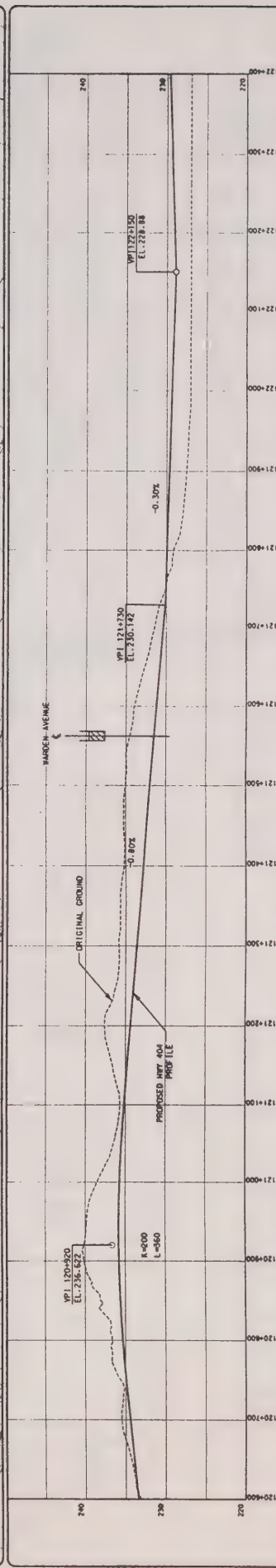


LEGEND
Existing Property Line
Proposed R.O.W.

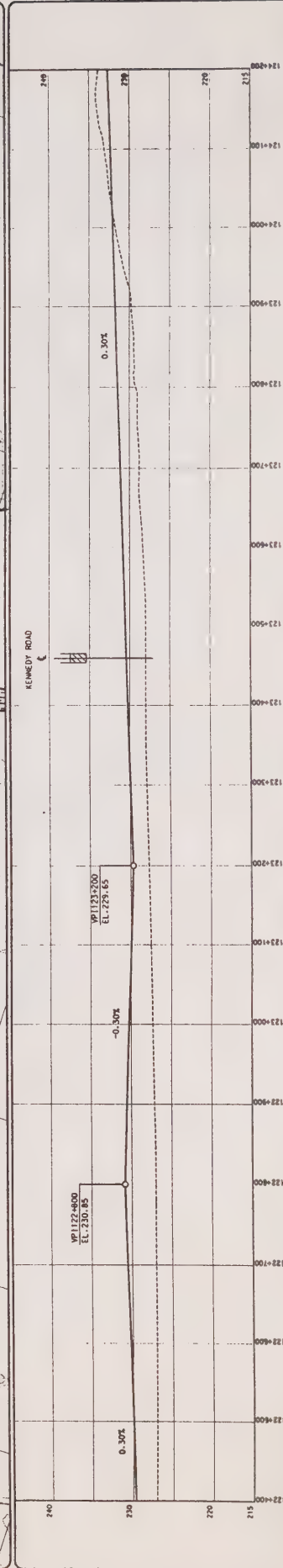
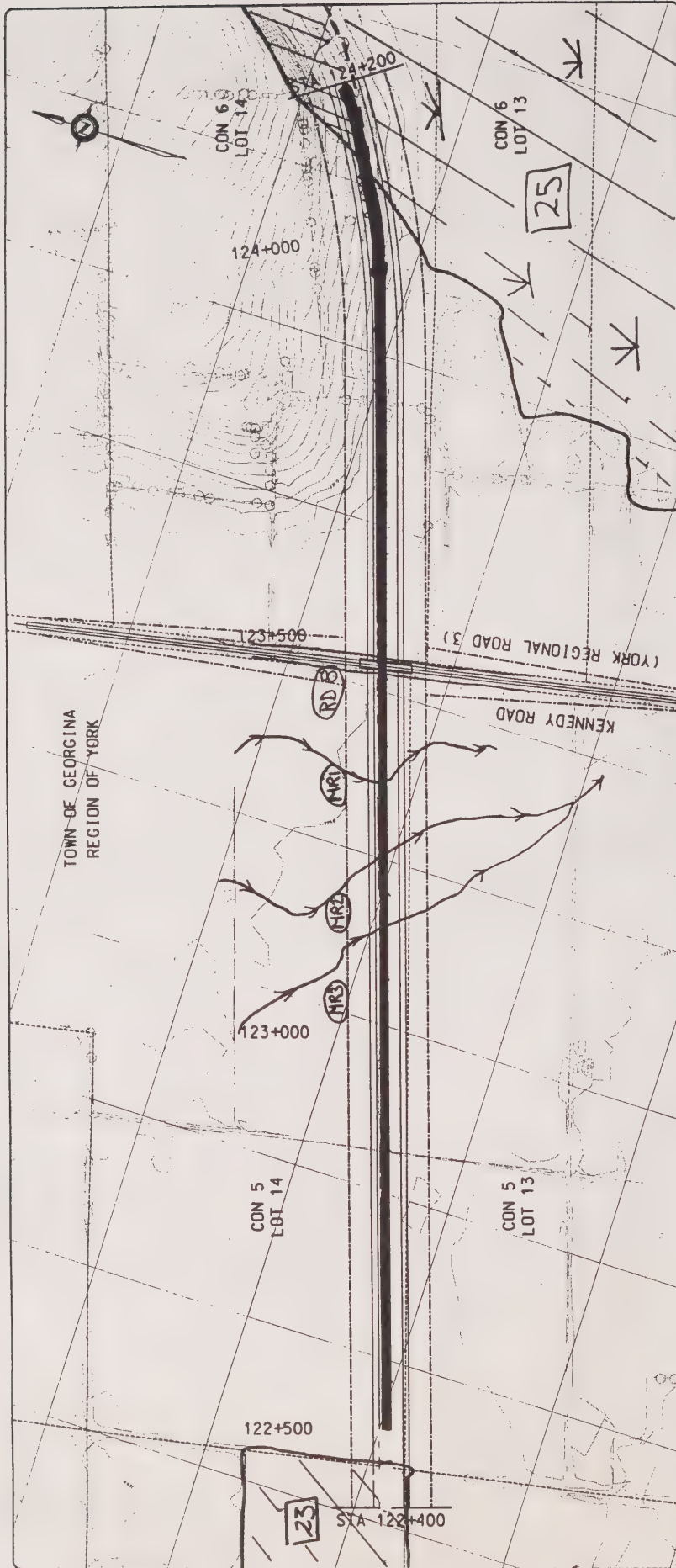


**HIGHWAY 404
EXTENSION**
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

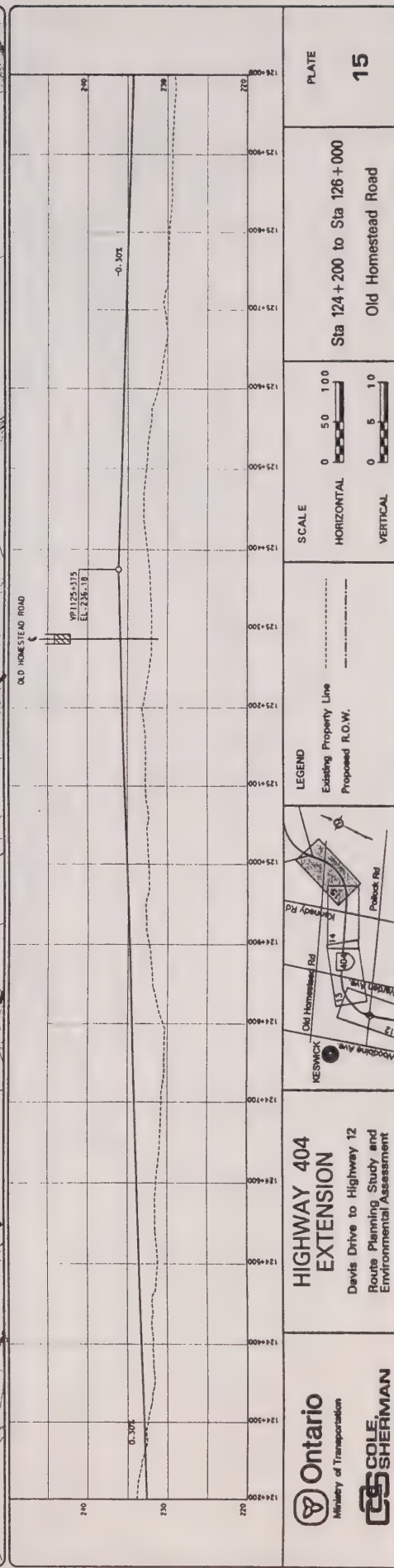
Ontario
Ministry of Transportation
COLE SHERMAN

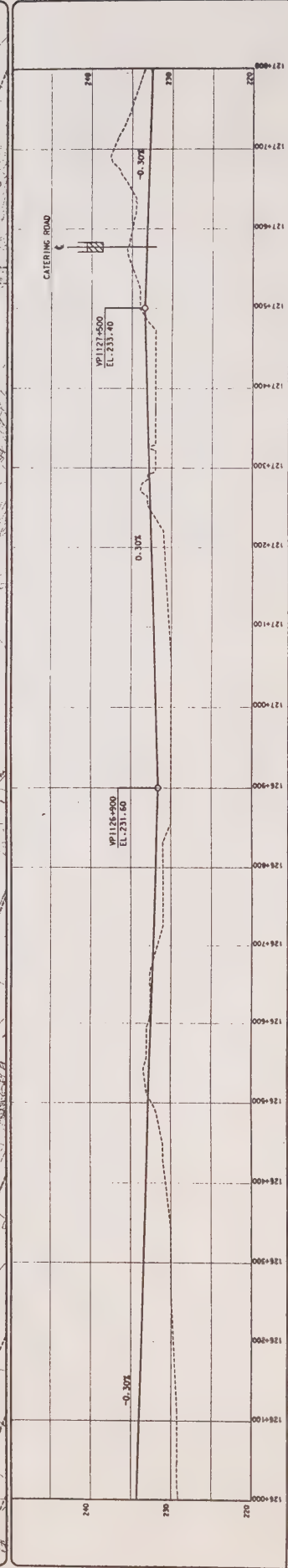
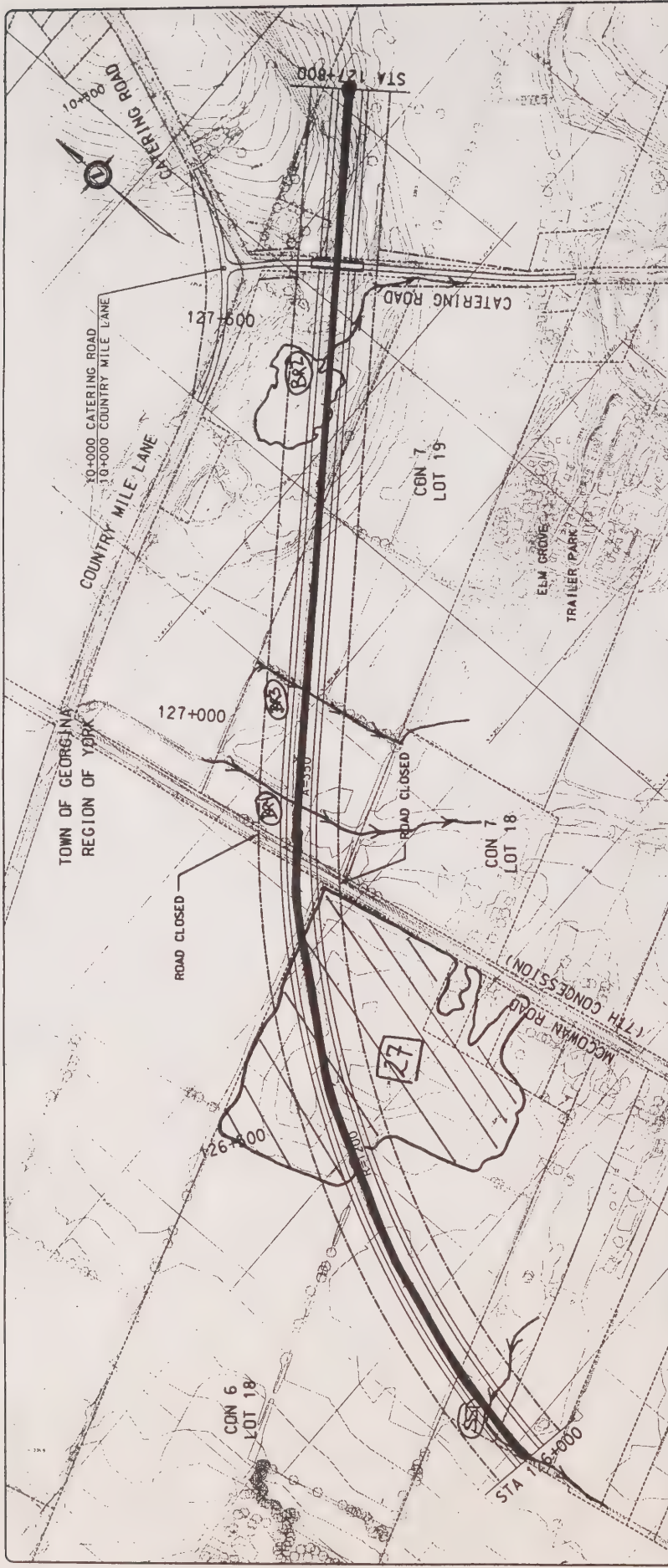


 Ontario Ministry of Transportation 	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	Sta 120+600 to Sta 122+400 Warden Avenue	PLATE 13
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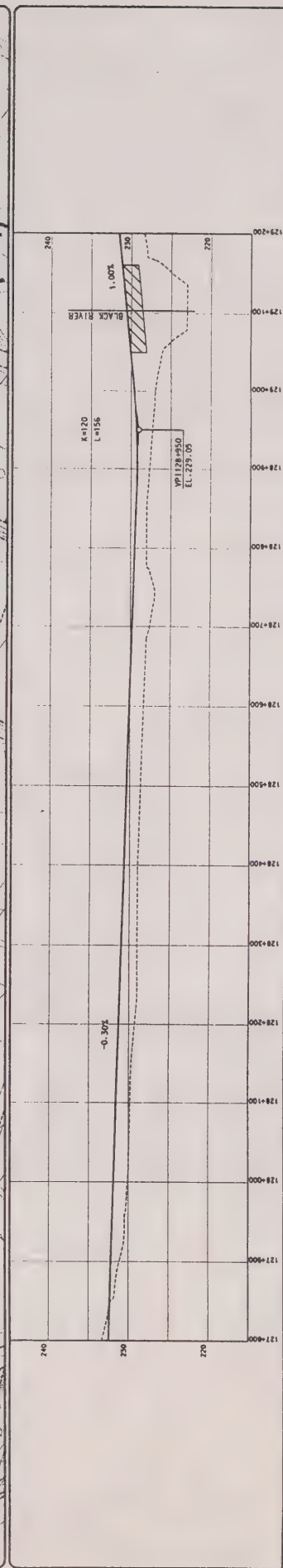
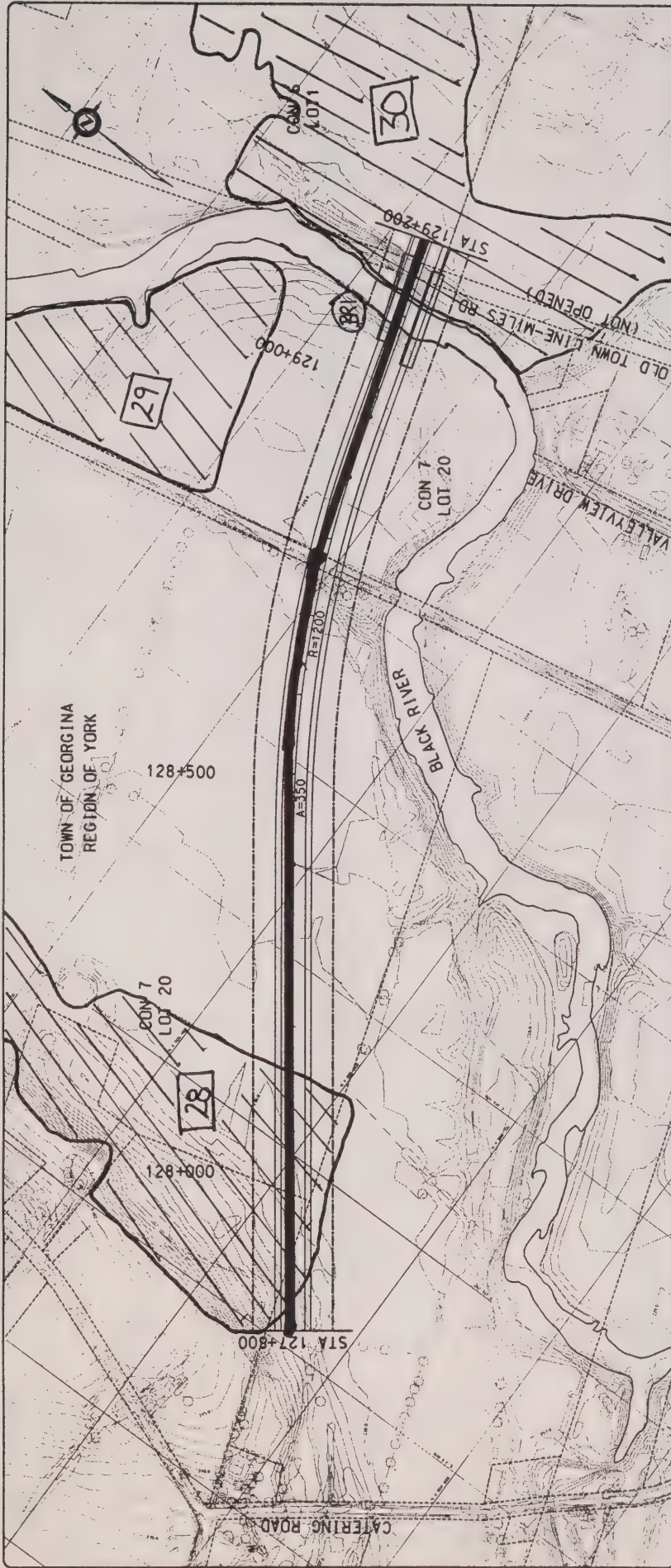


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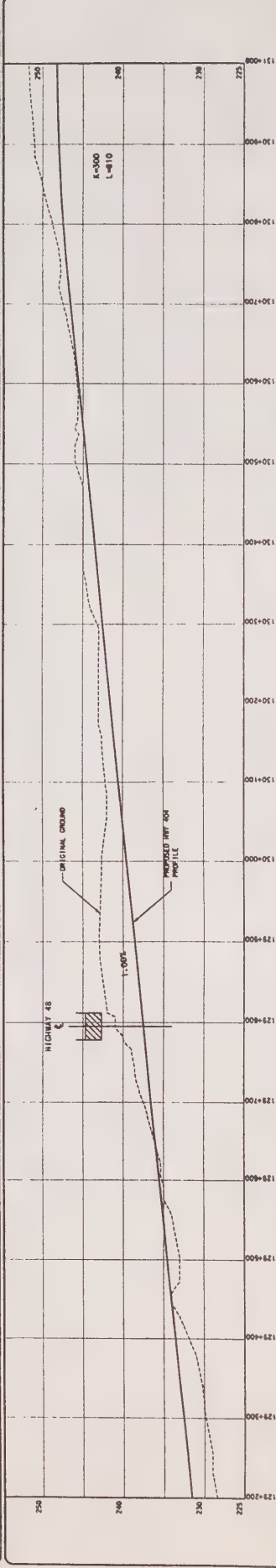
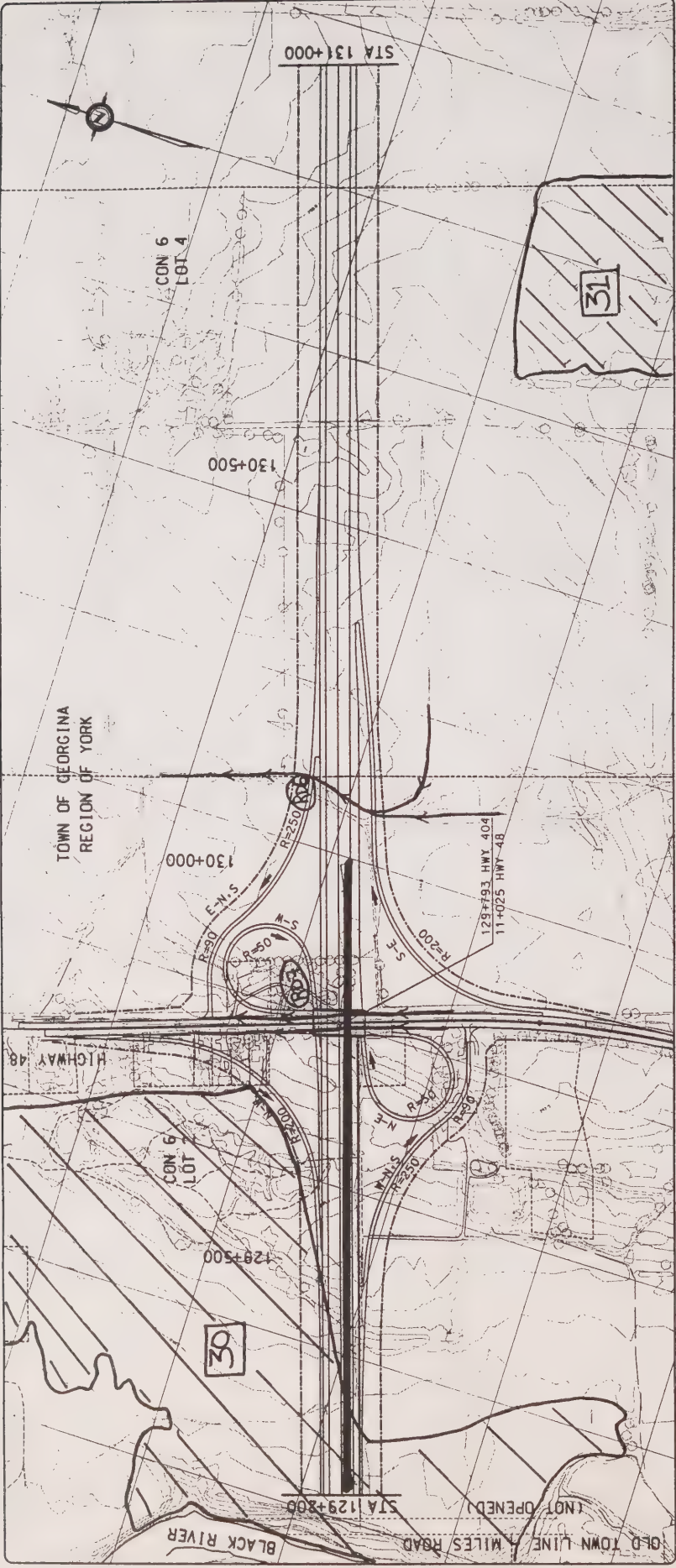




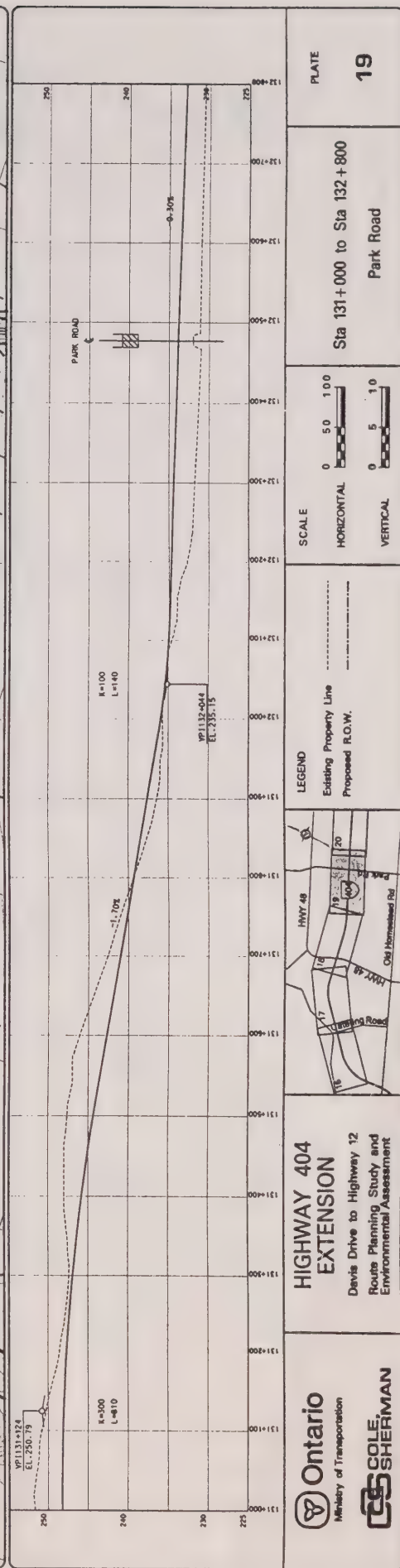
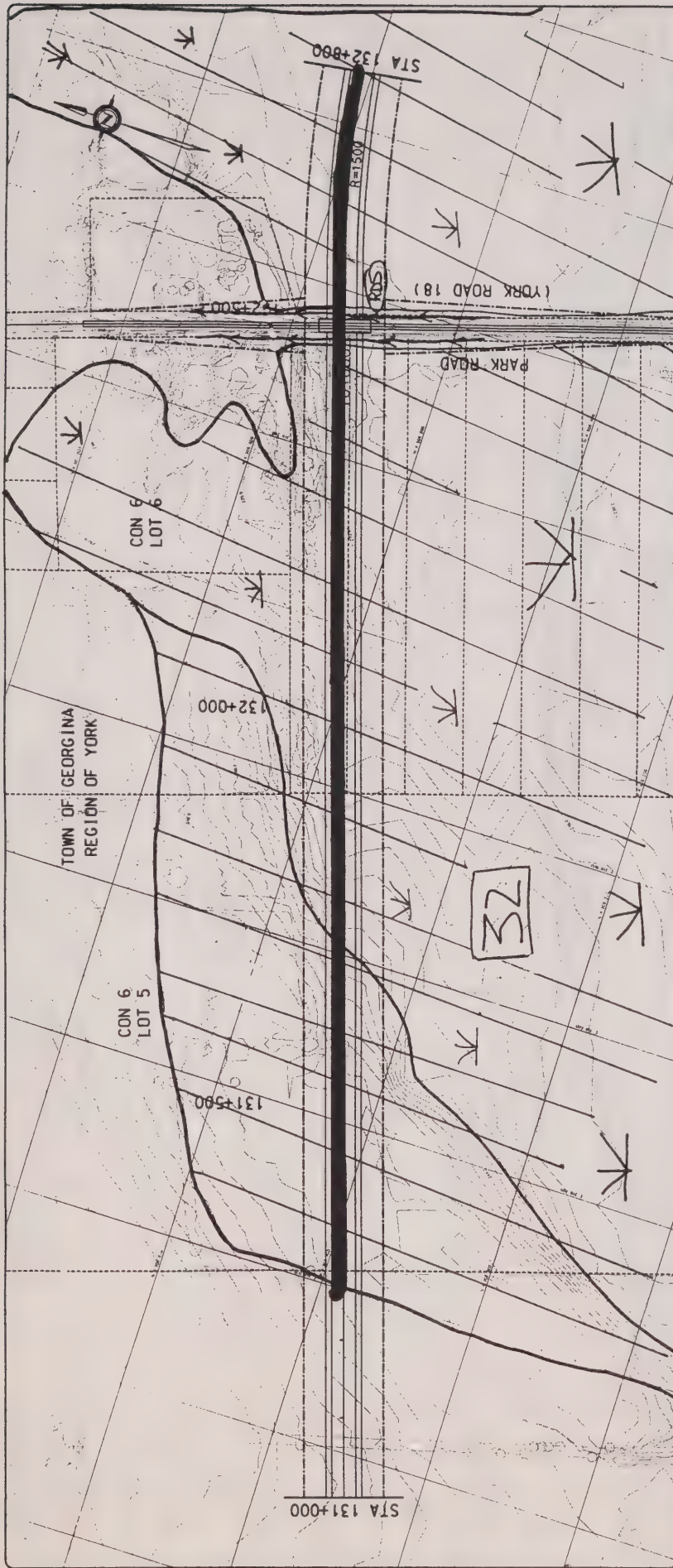
 Ontario Ministry of Transportation COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 126+000 to Sta 127+800 Catering Road	PLATE 16
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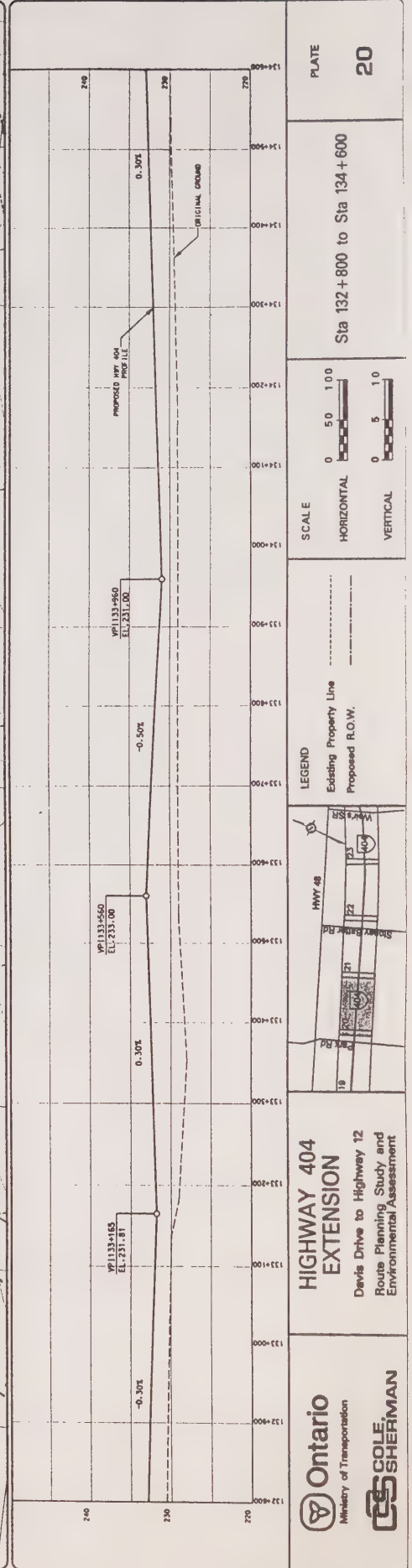
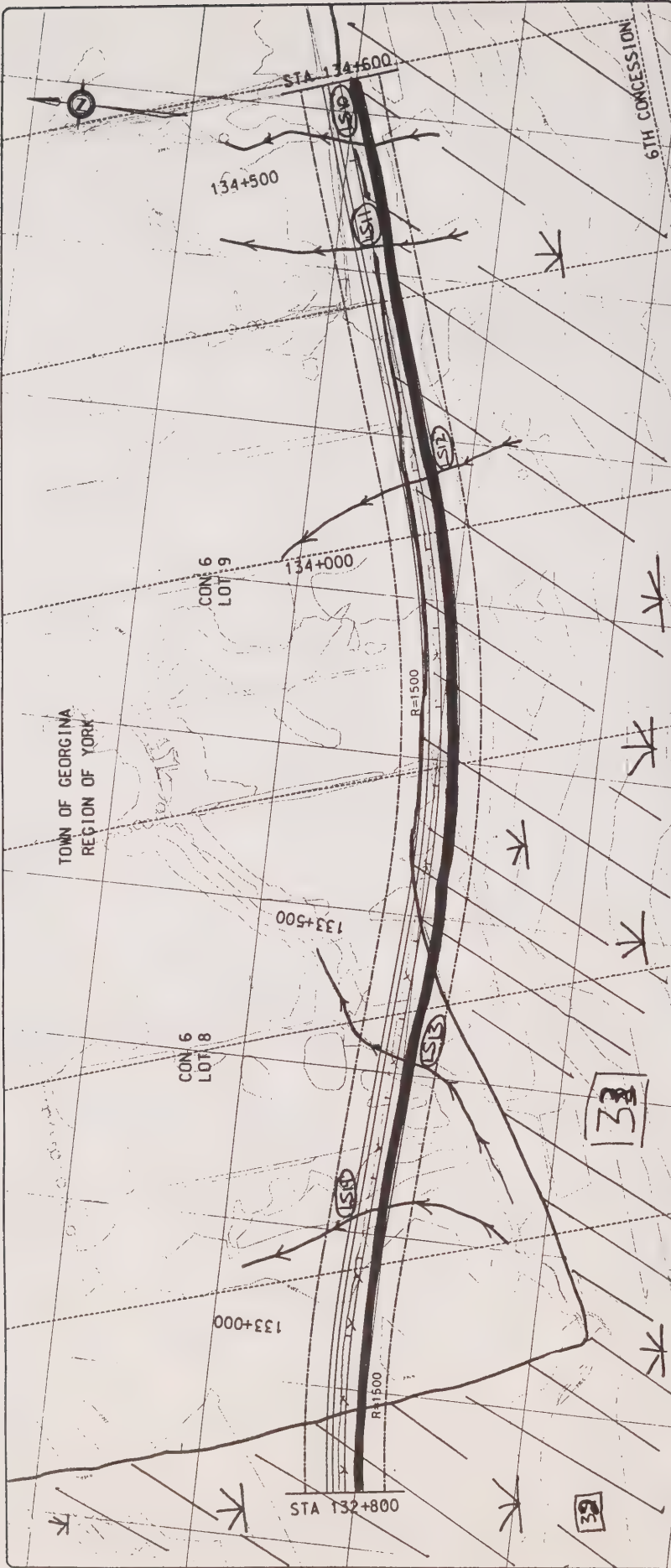


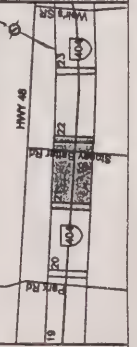
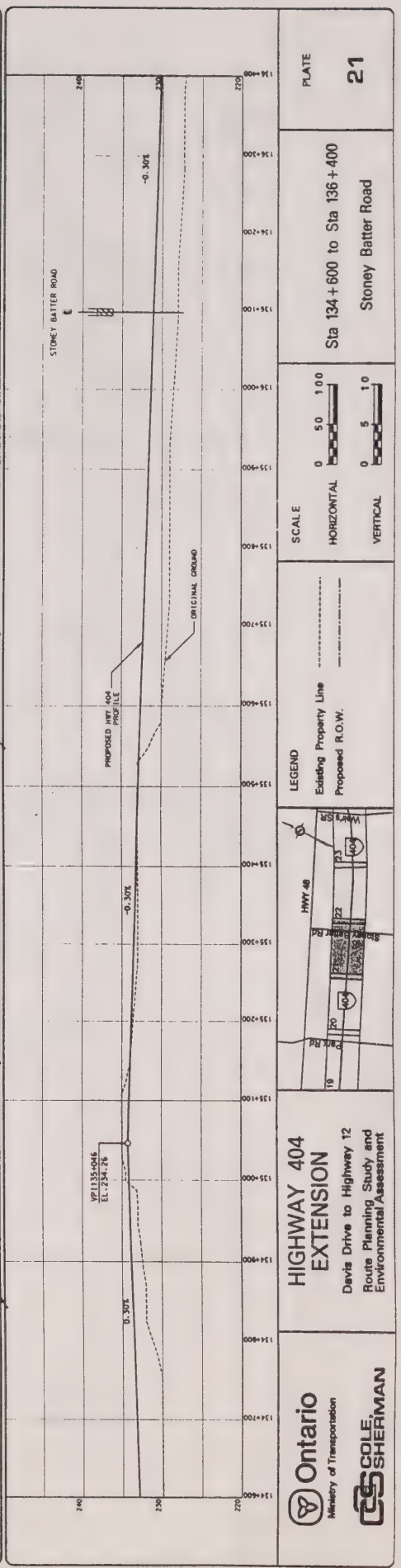
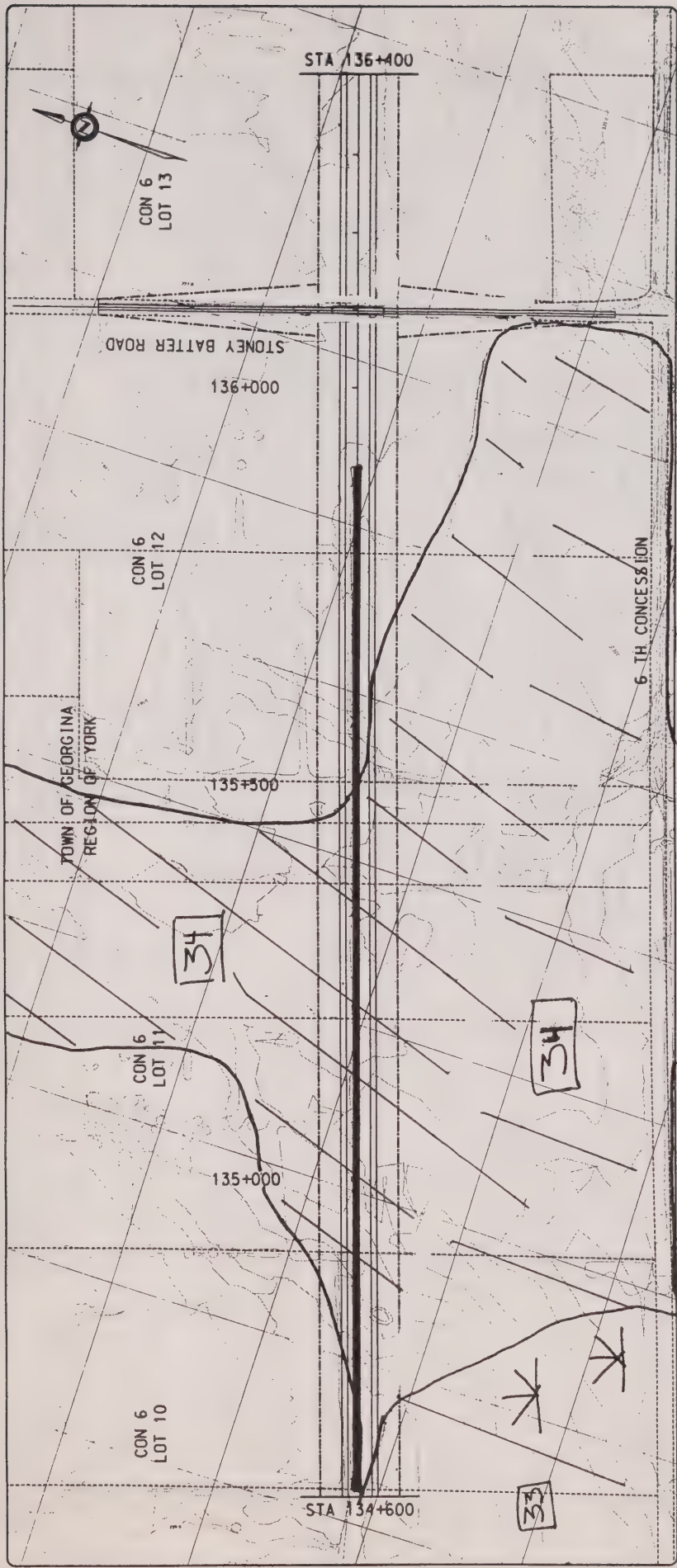
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<p>Ontario Ministry of Transportation</p>	<p>HIGHWAY 404 EXTENSION</p> <p>Devils Drive to Highway 12 Route Planning Study and Environmental Assessment</p>	<p>LEGEND</p> <p>Existing Property Line Proposed R.O.W.</p>	<p>SCALE</p> <p>HORIZONTAL 0 50 100</p> <p>VERTICAL 0 5 10</p>	<p>PLATE</p> <p>Sta 129+200 to Sta 131+000 Highway 48 Interchange</p> <p>18</p>
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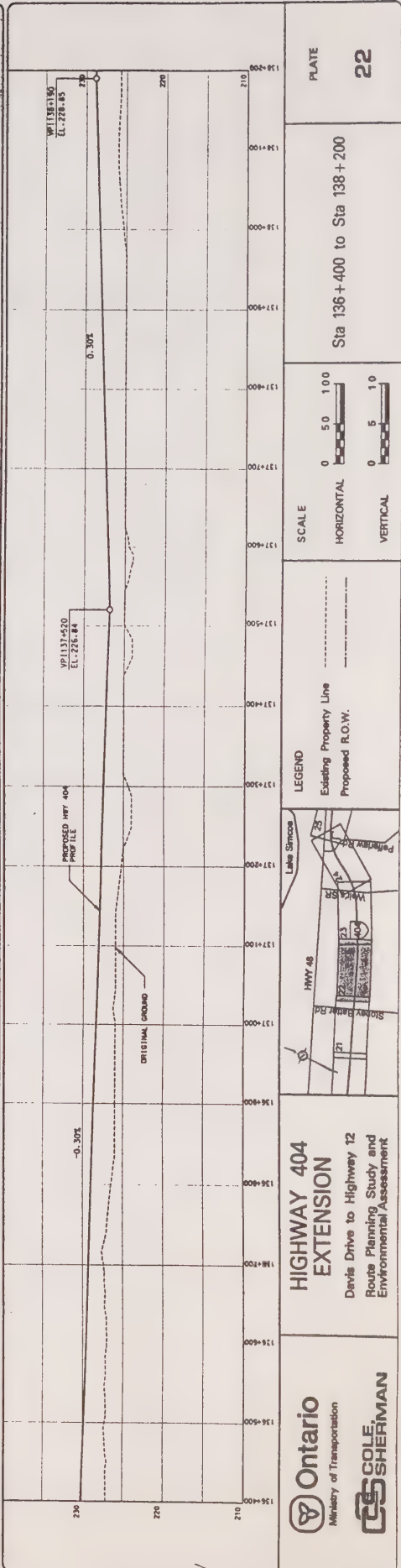
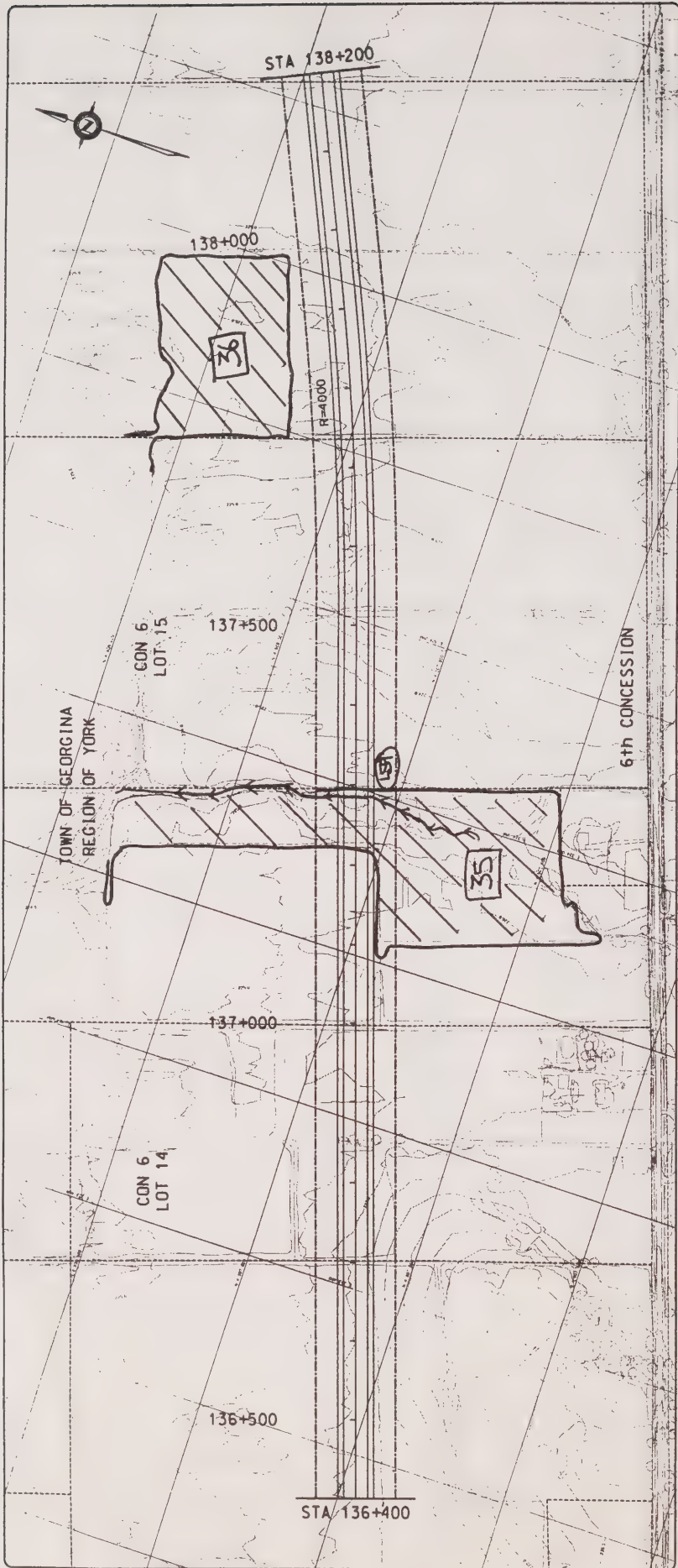




LEGEND
 Existing Property Line
 Proposed R.O.W.

SCALE
 HORIZONTAL
 0 50 100
 VERTICAL
 0 5 10

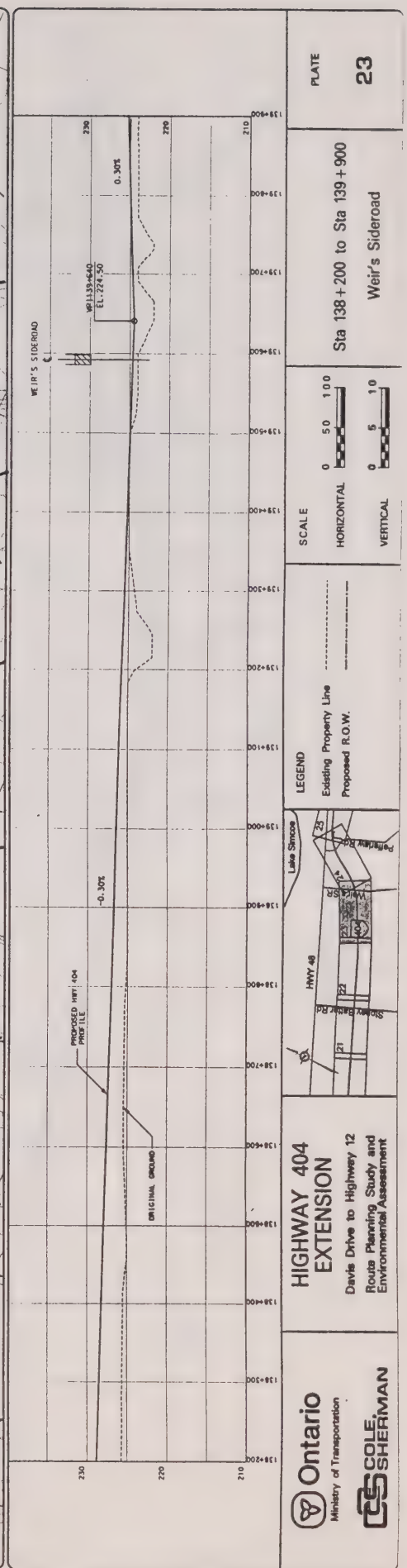
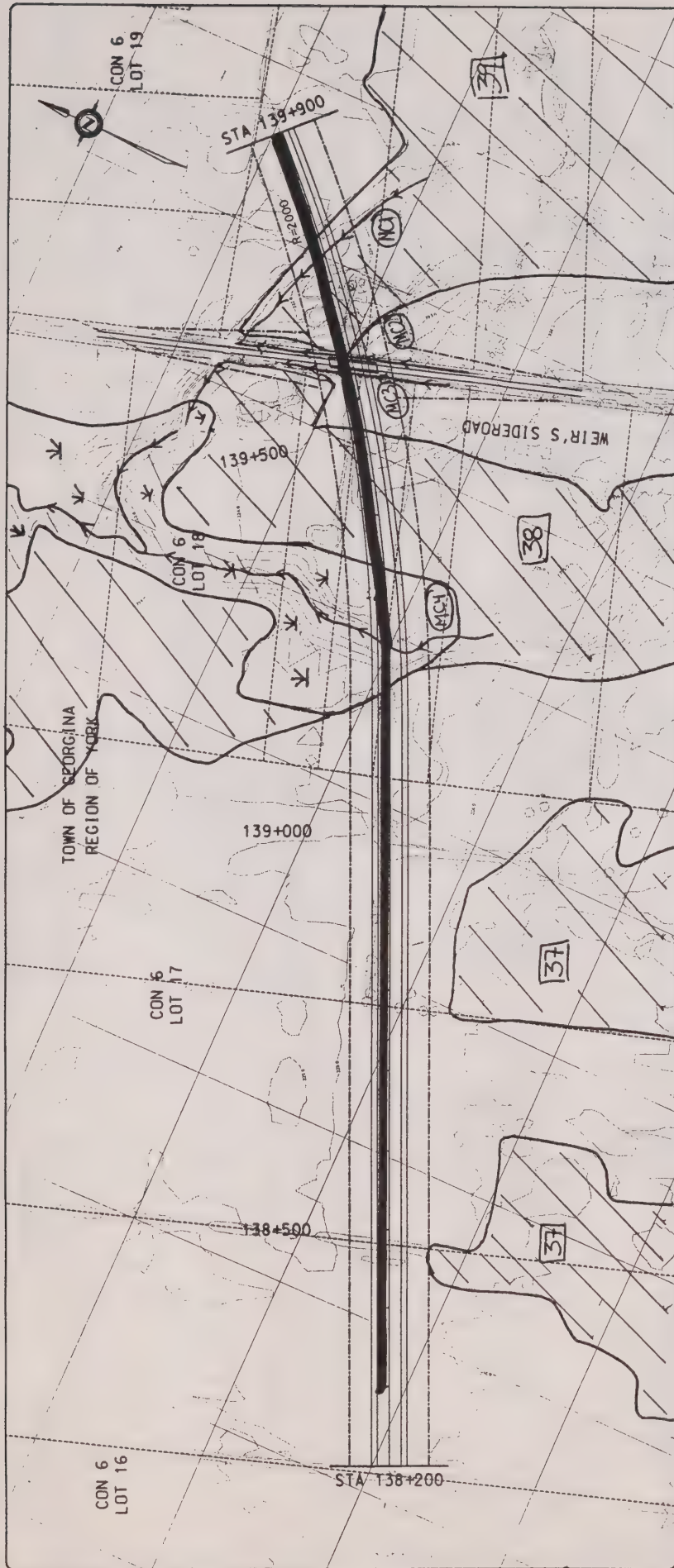
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 Stoney Batter Road

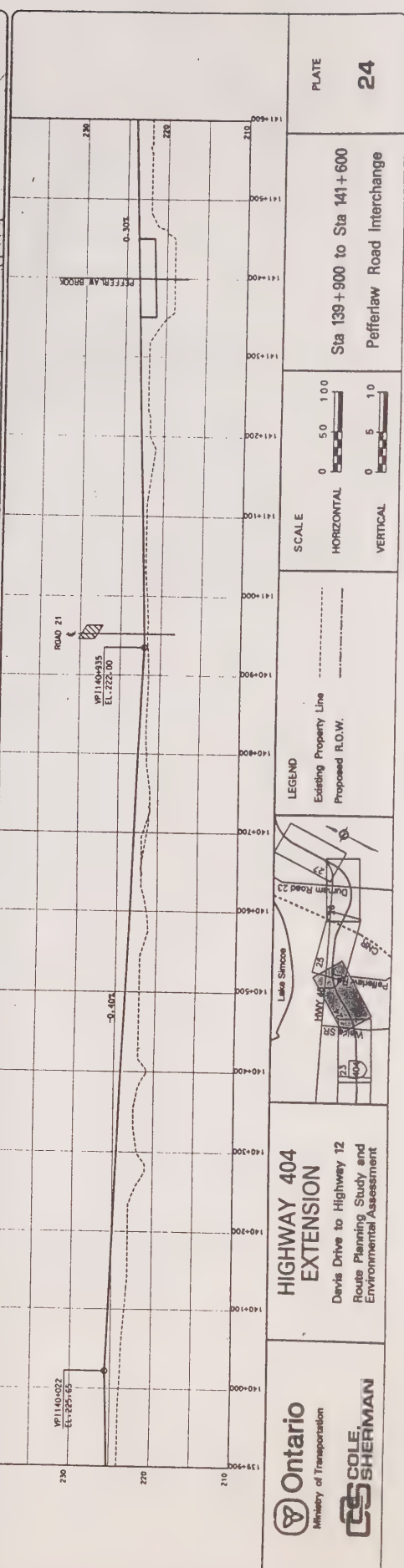
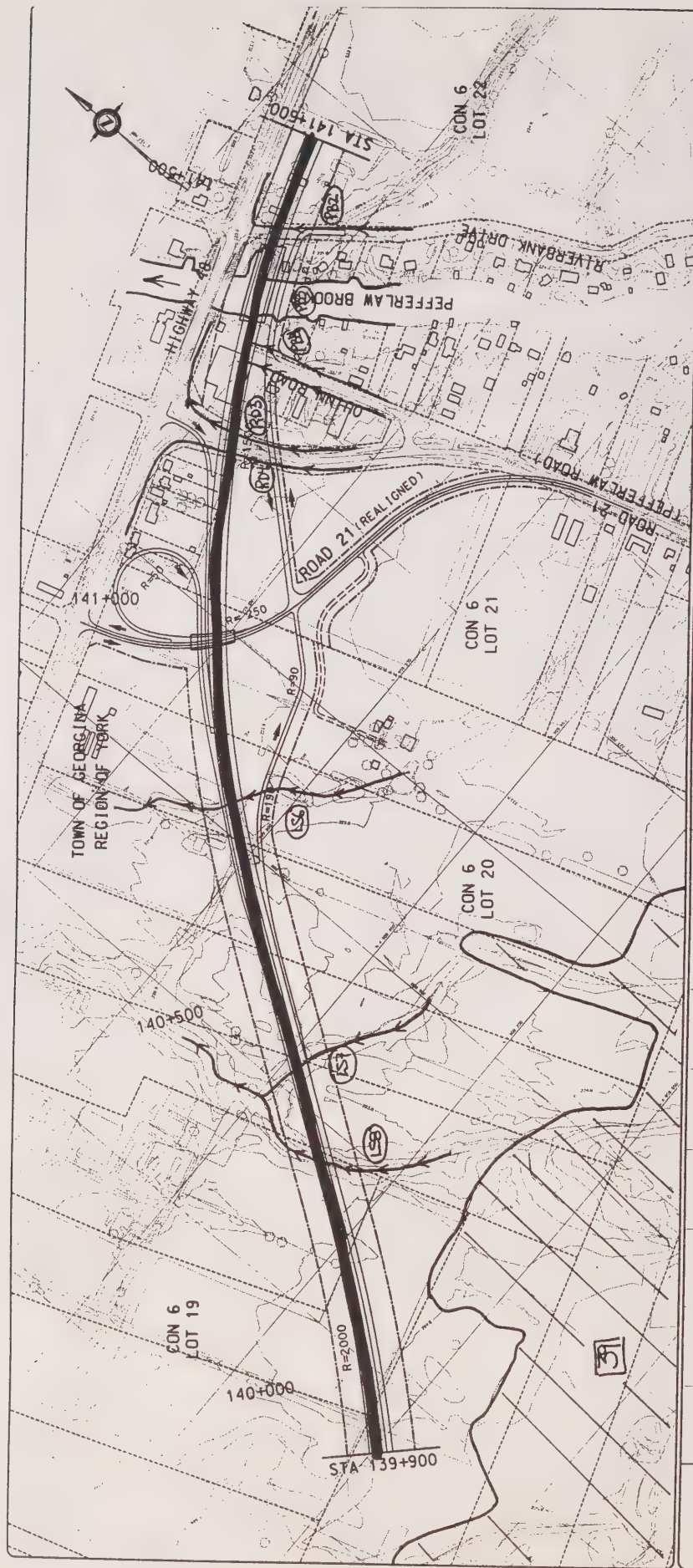


LEGEND
 Existing Property Line
 Proposed R.O.W.

SCALE
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 0 50 100
 VERTICAL
 0 5 10

Sta 136+400 to Sta 138+200

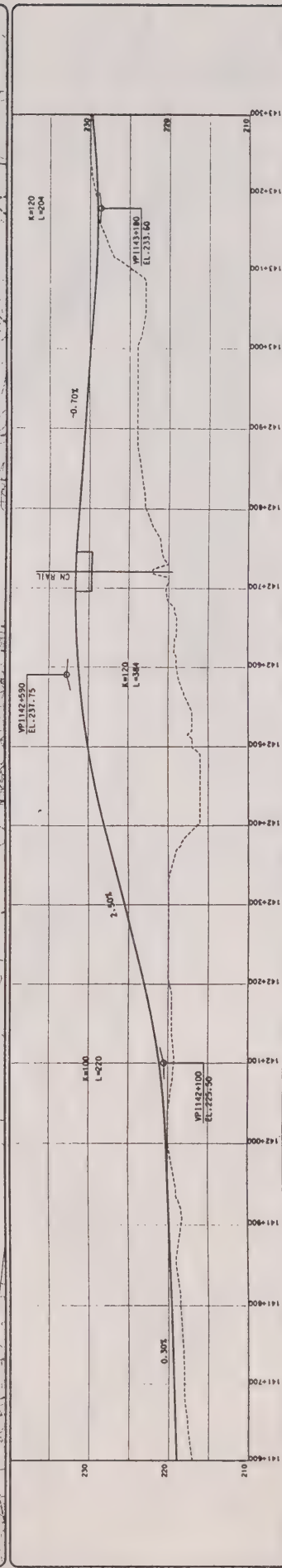


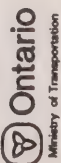
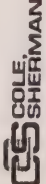



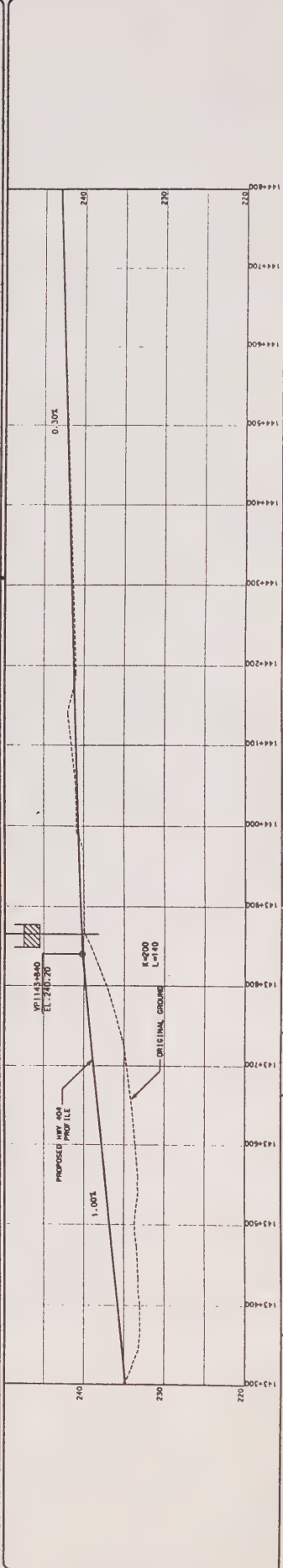
LEGEND
 Existing Property Line
 Proposed R.O.W.



SCALE
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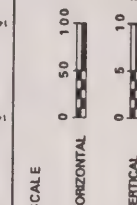
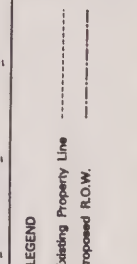
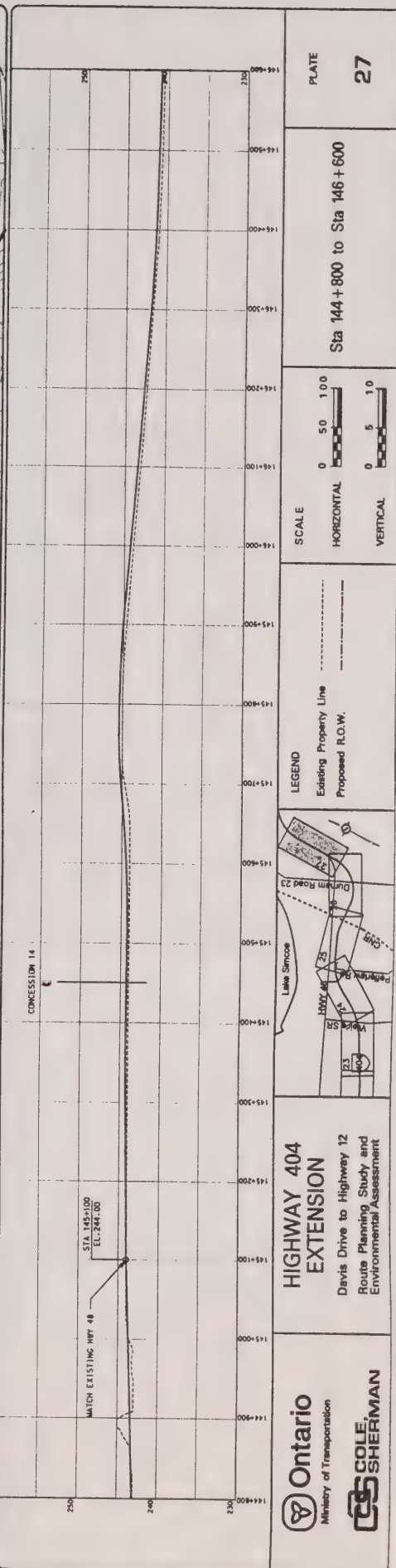
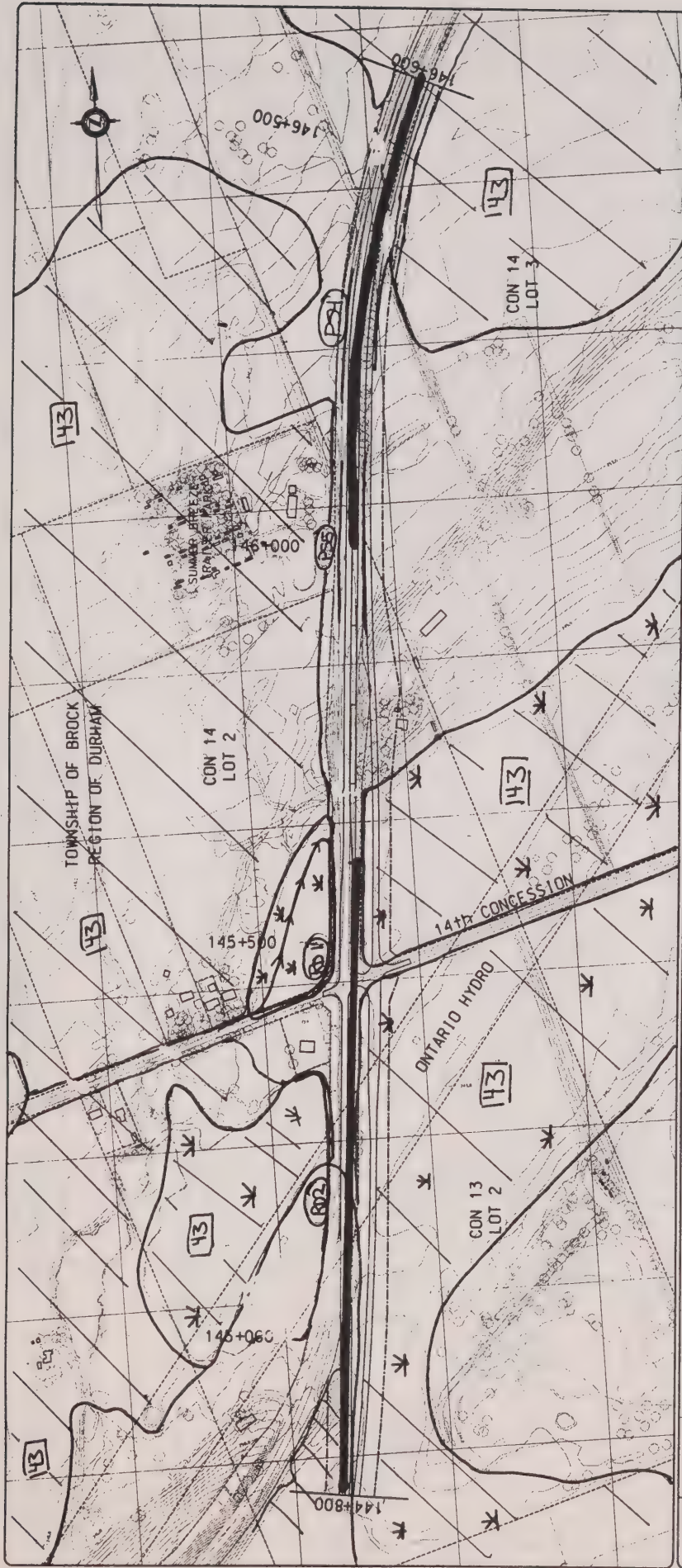
Sta 139+900 to Sta 141+600
 Pefferlaw Road Interchange

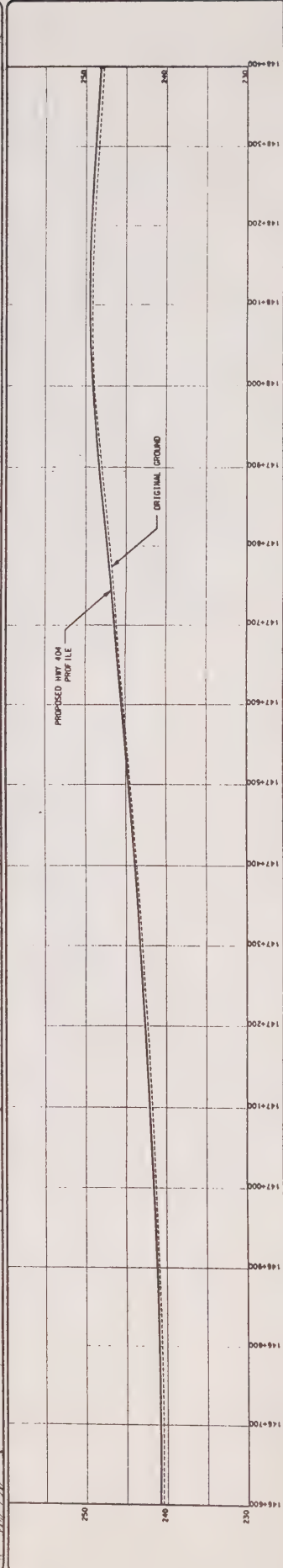
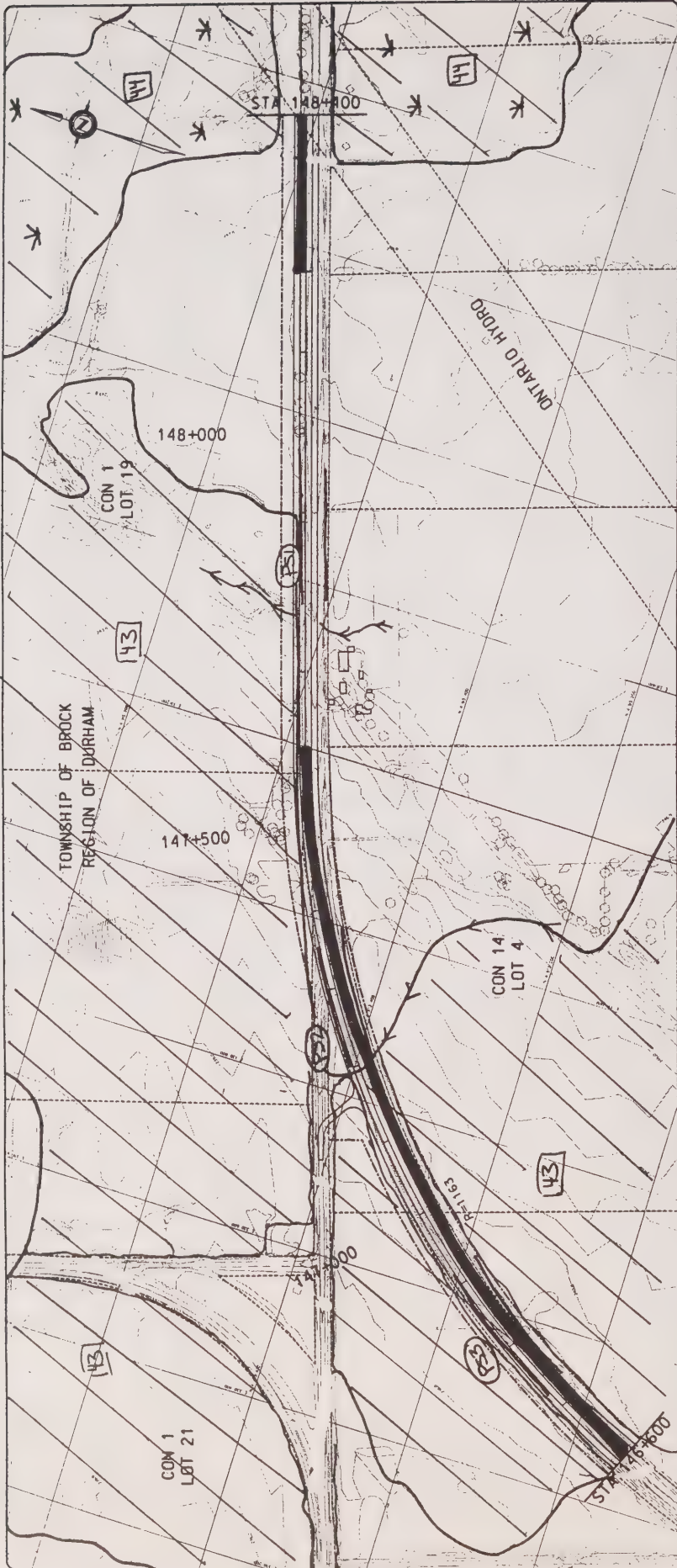


 Ontario Ministry of Transportation  COLE-SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	 LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 141+600 to Sta 143+300 PLATE 25
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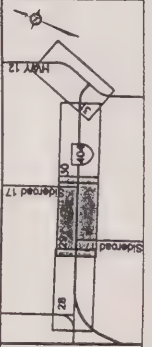
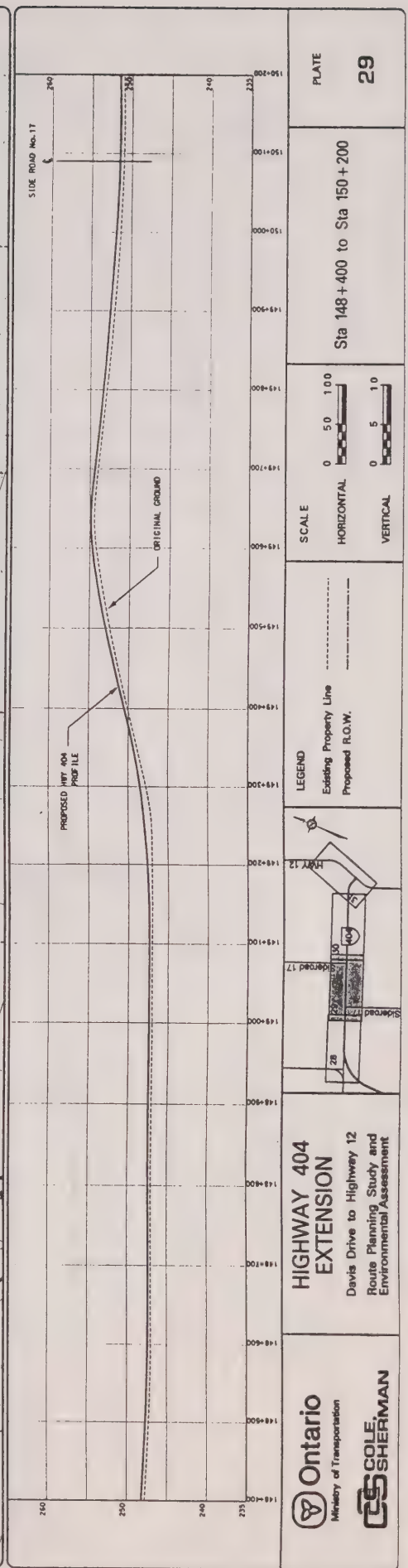
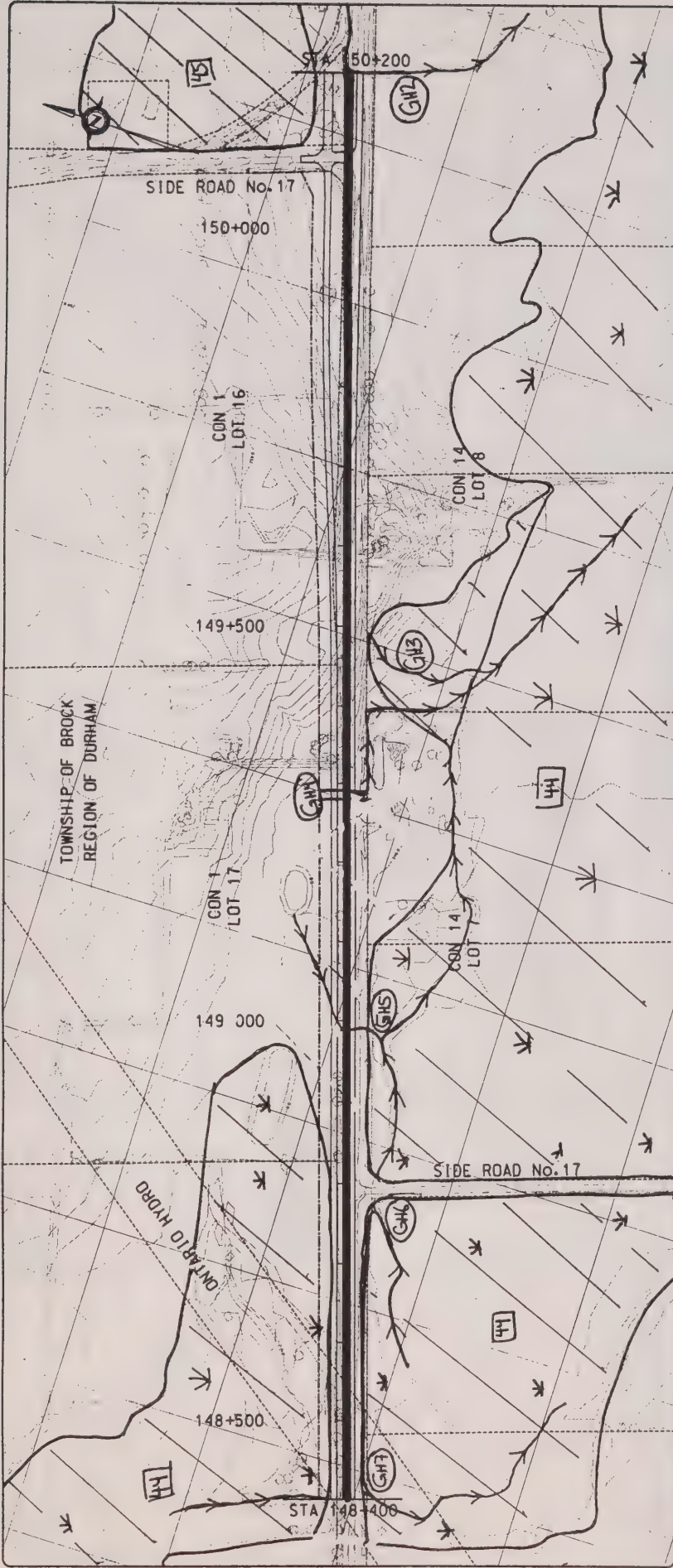


 COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	 Lake Simcoe Highway 404 Highway 12 Durham Road 23	LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 143+300 to Sta 144+800 Durham Road 23 Interchange	PLATE 26
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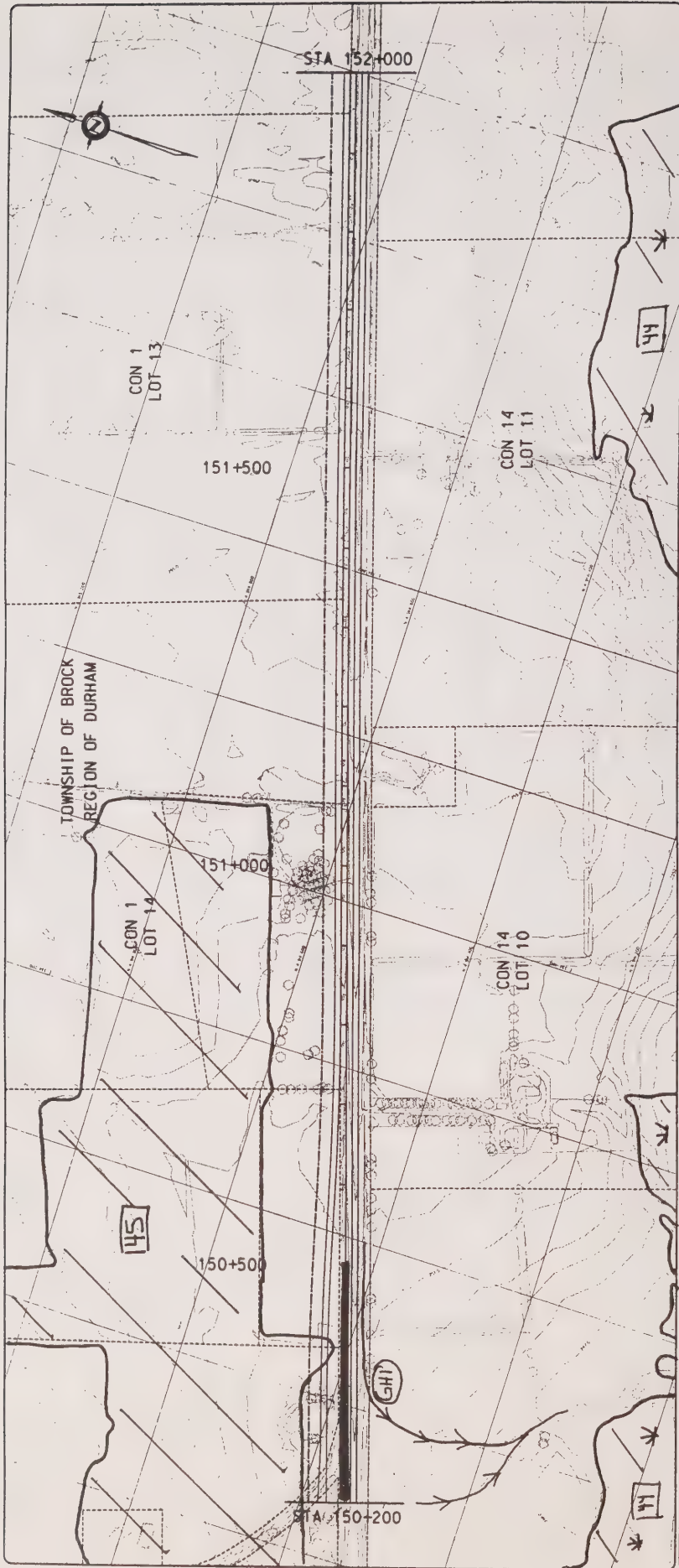
 Ontario Ministry of Transportation COLE/SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	 LEGEND --- Existing Property Line --- Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 146+600 to Sta 148+400 Highway 48 East	PLATE 28
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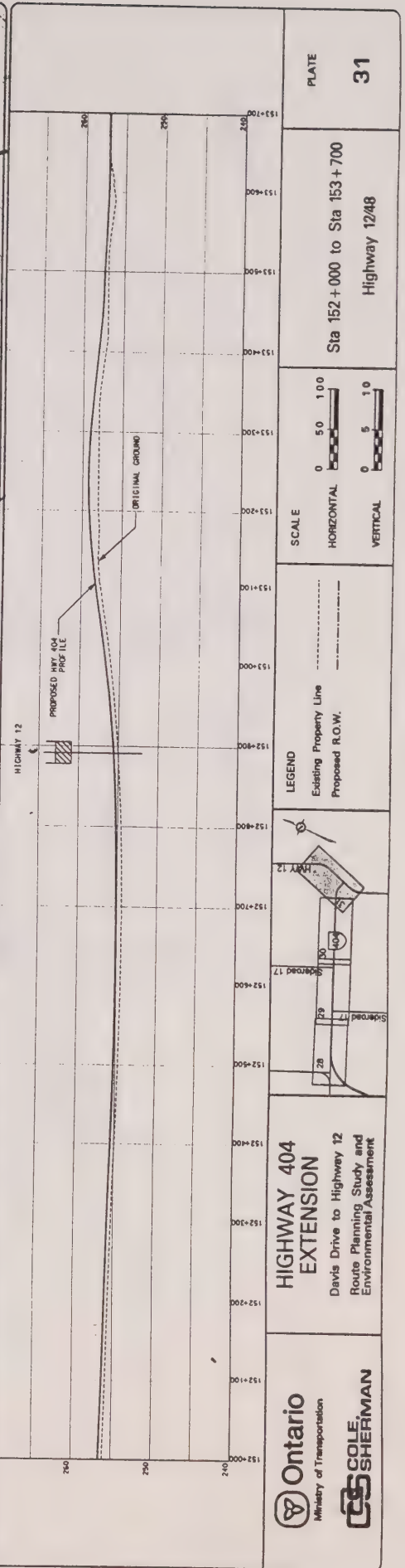
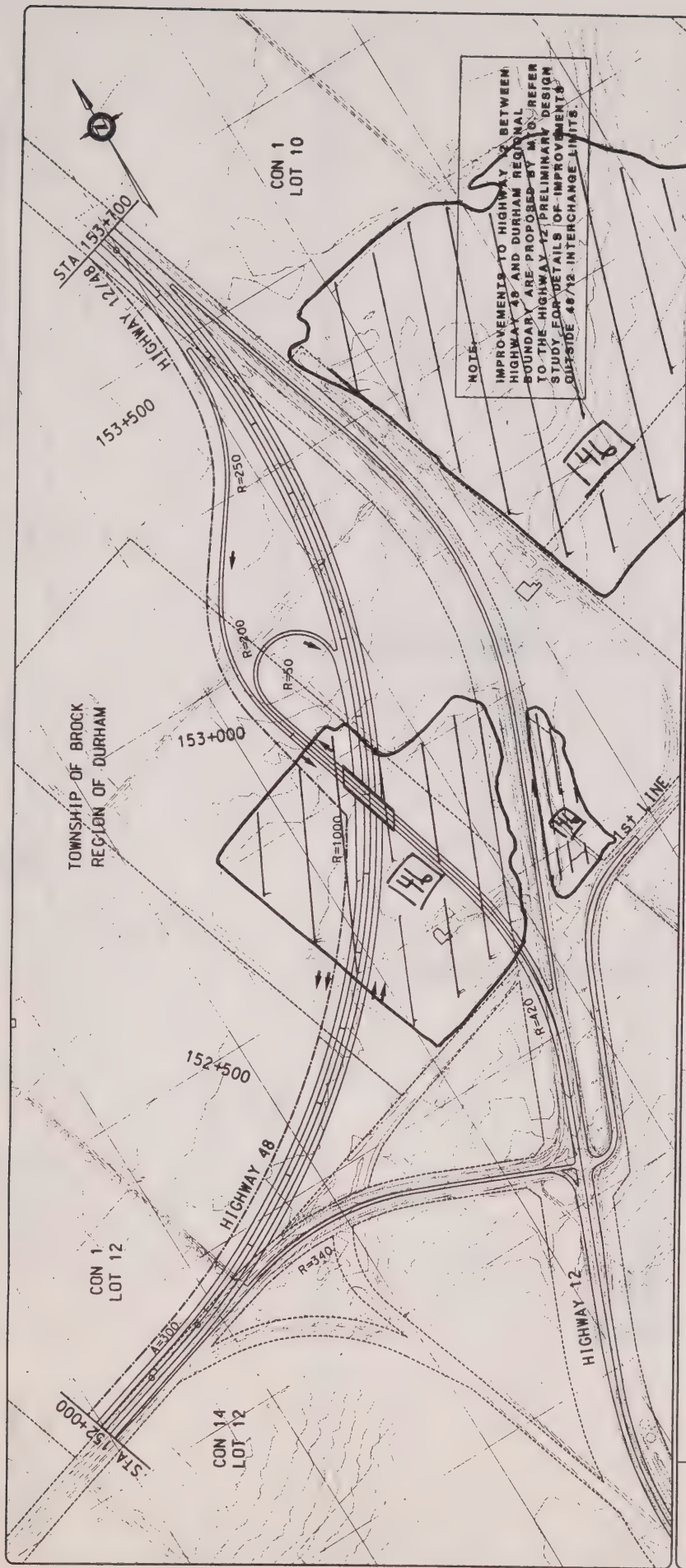
LEGEND
 Existing Property Line
 Proposed R.O.W.

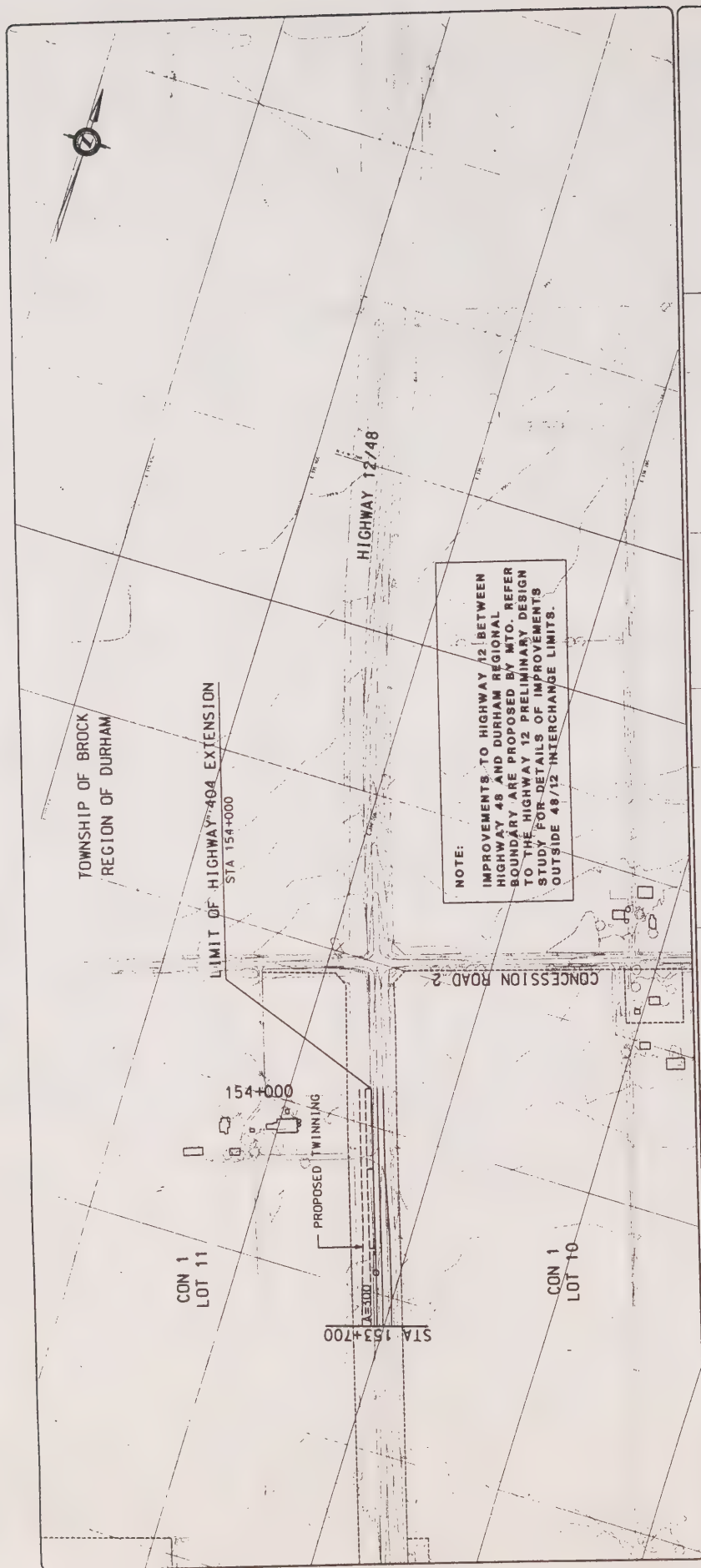


Sta 148+400 to Sta 150+200

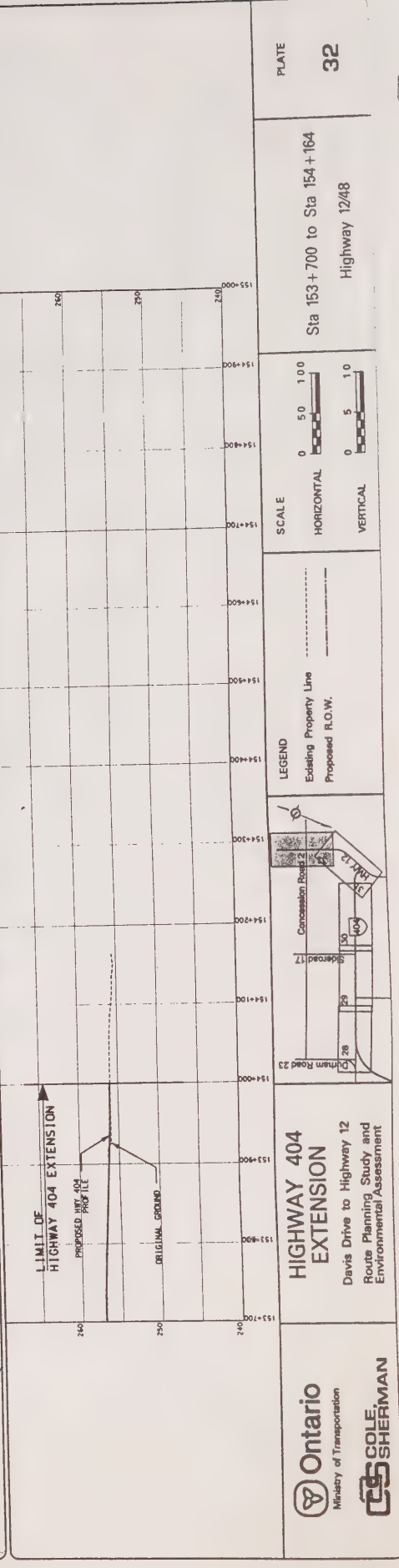


 Ontario Ministry of Transportation	HIGHWAY 404 EXTENSION Devils Drive to Highway 12 Route Planning Study and Environmental Assessment	 Scale: 1" = 100'	LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 150+200 to Sta 152+000	PLATE 30
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NOTE:
IMPROVEMENTS TO HIGHWAY 12 BETWEEN HIGHWAY 48 AND DURHAM REGIONAL BOUNDARY ARE PROPOSED BY MTO. REFER TO THE HIGHWAY 12 PRELIMINARY DESIGN STUDY FOR DETAILS OF IMPROVEMENTS OUTSIDE 48/12 INTERCHANGE LIMITS.



APPENDIX 4 HERITAGE IMPACT REPORT

HERITAGE IMPACT REPORT

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APPENDIX 4 - HERITAGE IMPACT REPORT

1.1 Role of heritage assessment

For the purposes of this assessment, the term “cultural heritage resources” is used to describe both “cultural landscapes” and “built heritage features”. “Cultural landscapes” are the use and physical appearance of the land as we see it now as a result of man’s activities over time in modifying pristine landscapes for his own purposes. A “cultural landscape” is perceived as a collection of individual man-made built heritage features into a whole such as farm complexes, roadscares, railways, etc. “Built heritage features” are individual parts of a cultural landscape unit such as buildings or structures of various types, cemeteries, planting and landscaping, etc.

1.2 Methods of assessment: Impact study areas

The approach adopted for the detailed cultural heritage assessment builds upon the approach employed in the assessment and evaluation of route alternatives. In route alternative assessment and evaluation two areas of impacts were identified: displacement of cultural heritage features within the right of way and those associated with farm displacements and road closures; and, disruption of cultural heritage features generally within 500 metres of the right-of-way.

For the purposes of field survey work conducted for the detailed assessment of the preferred technical route three study zones were identified:

- a right-of-way study zone comprising the lands to be cleared and developed for the proposed right-of-way;
- an off-route 25 metre study zone immediately adjacent to the right-of-way in which there was potential for associated clearance of land; and,
- an off-route 25 to 250 metre study zone comprising an area where land clearance was unlikely yet where impacts to cultural heritage may be experienced.

1.3 Potential adverse impacts to the heritage environment

It was determined that a number of potential adverse effects to cultural heritage may occur as a result of highway construction, operation and use. OMCzCR guidelines and advisory notes advise that an adverse effect on man-made heritage may be defined as one or more of the following conditions:

- “• *destruction or unsympathetic alteration of all or part of a cultural property;*
- *isolation of a cultural property from its surrounding environment; or*
- *introduction of physical, visual, audible, or atmospheric elements that are not in character with a cultural property and its setting”.*

Accordingly, two types of potential adverse effects to cultural heritage features were identified: “displacement” and “disruption”.

Right-of-way study zone impacts

The potential for the following adverse effects within the right-of-way study area as a result of highway construction and operation was assessed:

- displacement (loss or relocation) of built heritage features through destruction;
- displacement (loss) of cultural landscapes through destruction; and
- disruption of cultural landscapes through the introduction of new highway related features.

The displacement effects of the undertaking upon cultural heritage resources typically result from constructing the highway. Building removal either through demolition or relocation is usual. Loss of cultural landscape units such as agricultural lands and farm complexes may also be typical, as well as road closures.

There will be a number of adverse effects associated with displacement that generally may not be comprehensively mitigated. These include: the loss of

built heritage features and cultural landscape units such as farm complexes, roadsides and agricultural landscapes located within the proposed right-of-way.

Disruption effects result from changing road characteristics with the construction of bridges or underpasses and from changing the characteristics of watersheds with the construction of bridges.

Within this zone all built heritage features and cultural landscapes were subject to survey.

Off-route 25 metre study zone impacts

The potential for the following adverse effects within the off-route 25 metre study zone as a result of highway construction, use and operation was assessed:

- displacement (loss or relocation) of built heritage features through destruction;
- displacement (loss) of cultural landscapes through destruction;
- disruption of built heritage features through isolation and introduction of visual, audible, or atmospheric elements; and,
- disruption of cultural landscapes through isolation and introduction of visual, audible, or atmospheric elements.

Displacement effects have been described for the right-of-way and remain the same for this area. Disruption effects upon cultural heritage resources on-site typically result from the direct and indirect effects of the introduction of visual, audible, or atmospheric elements not in character with the features retained on-site or their settings (See discussion of adverse noise and dust impacts in the following section); and, the isolation of built heritage features and cultural landscapes retained adjacent to the highway when they are visually set apart from their former setting, e.g., former agricultural lands or farm complexes.

Within this zone all built heritage features and cultural landscapes were subject to survey.

Off-route 25 to 250 metre study zone impacts

The potential adverse effects identified for the 25 to 250 metre area as a result of highway construction, use and operation are as follows:

- disruption of built heritage features through isolation and introduction of visual, audible, or atmospheric elements; and,
- disruption of cultural landscapes through isolation and introduction of visual, audible, or atmospheric elements

Adverse impacts due to noise and dust from highway construction and use were not considered for non-habitable built heritage features such as barns, silos or ancillary farm buildings since there are no identified adverse impacts to the building fabric of these features that require mitigation.

Noise and dust impacts may be mitigated in habitable heritage buildings by various means. Noise impacts are specifically addressed in the Noise Appendix. Dust suppression techniques are used by MTO during construction.

The introduction of construction and end-use traffic related noise and dust is not in character with the setting of all built heritage buildings and is thus considered to be a potential adverse effect. Furthermore, there is potential for adverse effects to cultural landscapes from the introduction of related noise and dust. Due to the character of roadscape or railway cultural landscape units (where noise and dust usually result from the variety of use, operations and maintenance activities of transportation facilities) the effect of noise and dust on these features is considered to be negligible.

Disruption effects are described in the following.

Noise

Noise effects on built heritage features have generally been documented in technical literature. There is no reliable or definitive research or documentation that describe specific impacts to built heritage features within prescribed or clearly demarcated areas based on distance from the source of “nuisance”. With respect to the acoustic environment of built heritage features, intrusive noise and high levels of background noise are often reduced or mitigated by the installation of fencing, berming or screen plantings.

The introduction of intrusive and high levels of background noise related to the highway is considered to be out of character with a rural setting, thus having a potentially negative effect on the setting of cultural landscapes.

Dust

Technical literature also indicates that particulate matter, such as smoke, dust and sand particles can cause deposition effects upon built heritage features including discolouration, soiling of building fabric on both horizontal and vertical surfaces and abrasion. This may result in such mitigative measures as application of synthetic cladding to permit “maintenance free” or easily cleaned buildings.

The introduction of highway related dust is considered to be out of character with a rural setting and may have a potentially negative affect on the setting of cultural landscapes.

Visual

Cultural heritage resources may be adversely affected by visual impacts. Visual impacts may result from the introduction of the highway, including related structures such as bridges, culverts and ramps and mitigation measures such as berm or barrier construction, and result in silhouetting and the subsequent disruption to the setting of built heritage features and cultural landscapes.

Visual impacts due to introduction of the proposed highway into the landscape take the form of disruption to the setting and character of built heritage features and cultural landscapes.

1.4 Data collection

For the detailed assessment of the proposed right-of-way and associated study area impact zones, survey work was undertaken to identify affected cultural heritage resources. This work together assisted in the determination of the significance of the impact and deriving general principles and measures for mitigating predicted adverse impacts.

All standing buildings and structures, including above ground ruins, that were visible and built before 1956 were inventoried. Cultural landscape units were also inventoried.

Right-of-way study zone survey

Detailed field survey sheets were completed for each cultural heritage resource for the right-of-way survey. Survey work was limited to observation and completion of an inventory from the roadside. This included a written description of the cultural feature, a general statement of exterior building integrity and a description of historical associations. The completed survey forms are provided in Appendix A.

Off-route 25 metre study zone survey

Similar inventory work for the off-route study zone was undertaken in the off-site area as for the right-of-way survey, including a general statement of exterior building integrity and a description of historical associations. Survey work was limited to observation and completion of an inventory from the roadside.

Off-route 25 to 250 metre study zone survey

A comprehensive windshield survey of the proposed haul route was also undertaken for the detailed heritage assessment of the off-route 25 to 250 metre study zone. Survey work was limited to observation and completion of an inventory from the roadside.

Each habitable built heritage feature and cultural landscape was inventoried, photographed (if possible from the roadside) and mapped. Habitable buildings did not include heritage buildings such as barns, silos, or ancillary farm buildings.

1.5 Method and results of analysis

For the purposes of the detailed heritage assessment of the proposed route, all potentially affected cultural heritage resources were subject to inventory. Inventory forms for each feature are provided in Appendix A. A common base of consistent information was collected for each type of feature.

The Heritage analysis comprised:

- an assessment using heritage attributes such as architectural interest, historical associations and integrity to determine the heritage value of built heritage features and cultural landscape units;
- the determination of general impacts to cultural heritage features; and,
- the preparation of summary tables showing identified cultural heritage features and predicted impacts.

Right-of-way: Existing environment

All references to built heritage features and cultural landscapes are located on Map 1 (Contained at the end of this report). Summaries of the built heritage features and cultural landscapes and associated impacts are found in Table 1.

Within the right-of-way twelve (12) built heritage features are located and have the potential to be displaced. These are: BHF 4, an outbuilding; BHF 16, a log outbuilding; BHF 22, 23, 33 and 36, all residences; BHF 37, a silo; BHF 38, a barn ruin; BHF 30 and 41, barns; BHF 42, a silo; and BHF 43, an unidentified structure.

Eight (8) cultural landscapes are located within the right-of-way and have the potential to be displaced. These are: CLU 1, 3, 8, 12, 20, 23, 29 and 42, all roadsides.

Fourteen (14) cultural landscapes are located within the right-of-way and have the potential to be disrupted. These are: CLU 6, 13, 24, 26, 28, 32, and 38, all roadscares; CLU 21, 22, 35 and 41, all waterscares; CLU 43, a railscares; CLU 44, a farm complex, and CLU 55, a former railway right-of-way.

Off-route 25 metre: Existing environment

All references to built heritage features and cultural landscapes are located on Map 1. Summaries of the built heritage features and cultural landscapes and associated impacts are found in Table 1.

Within the off-route 25 metre area six (6) built heritage features are located and have the potential to be displaced or disrupted. These are: BHF 9, an outbuilding; BHF 17, a farmhouse; BHF 21, a barn; BHF 45, a barn; BHF 46, a barn; and BHF 47, an outbuilding.

Six (6) cultural landscapes are located within the off-route 25 metre area and thus there is potential for displacements or disruptions. These are: CLU 7, CLU 17 and 47, all farm complexes, and CLU 45, 46 and 48, all roadscares.

Off-route 25 to 250 metre: Existing environment

All references to built heritage features and cultural landscapes are located on Map 1. Summaries of the built heritage features and cultural landscapes and associated impacts are found in Table 1.

Within the off-route 25 to 250 metre area thirty-one (31) built heritage features are located and have the potential to be disrupted. These comprise: 21 farmhouses; 7 residences; 2 barns; and 1 silo.

Twenty-seven (27) cultural landscapes are located within the off-route 25 to 250 metre area and have the potential to be disrupted. These comprise: 23 farm complexes; 2 roadscares; and 2 former road-rights-of-way.

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
BHF 1	Residence Whit/Stouff	Lot 35 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 2	Residence E Gwillim.	Lot 1 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 3	Farmhouse E Gwillim.	Lot 8 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 4	Outbuilding Lot 12 Con. 3 E. Gwillim.	105 + 200	Within proposed ROW potential for removal or demolition.	Displacement
BHF 5	Farmhouse E Gwillim.	Lot 12 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 6	Farmhouse E Gwillim.	Lot 13 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 7	Residence E Gwillim.	Lot 16 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 8	Farmhouse E Gwillim.	Lot 20 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 9	Outbuilding Lot 20 Con. 3 E Gwillim.	108 + 400	Within 25m of proposed ROW potential introduction of visual, elements and isolation.	Displacement/ Disruption
BHF 10	Farmhouse E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 11	Farmhouse E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 12	Farmhouse E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 13	Farmhouse E Gwillim.	Lot 31 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 14	Farmhouse E Gwillim.	Lot 34 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
BHF 15	Farmhouse E Gwillim.	Lot 35 Con. 3	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 16	Log Outbldg Lot 1 Con. 4 Georgina(NG)	115 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 17	Farmhouse Georgina (NG)	Lot 4 Con. 4	Within 25m of proposed ROW potential for demolition and/or introduction of potential visual, audible, or atmospheric elements and isolation.	Displacement/ Disruption
BHF 18	Farmhouse Georgina (NG)	Lot 5 Con. 4	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 19	Farmhouse Georgina (NG)	Lot 6 Con. 4	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 20	Residence Georgina (NG)	Lot 13 Con. 4	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 21	Barn Lot 13 Con. 4 Georgina (NG)	121 + 500	Within 25m of proposed ROW potential for demolition and/or introduction of potential visual elements and isolation.	Displacement/ Disruption
BHF 22	Residence Lot 13 Con. 4 Georgina (NG)	121 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 23	Residence Lot 13 Con. 5 Georgina (NG)	121 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 24	Farmhouse Georgina (NG)	Lot 14 Con. 5	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 25	Farmhouse Georgina (NG)	Lot 14 Con. 6	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 26	Residence Georgina (NG)	Lot 16 Con. 6	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 27	Farmhouse Georgina (NG)	Lot 20 Con. 7	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF) AND
CULTURAL LANDSCAPE UNITS (CLUs)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
BHF 28	Farmhouse Georgina (NG)	Lot 19 Con. 7	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 29	Farmhouse Georgina (NG)	Lot 19 Con. 7	Within 250m of proposed ROW potential introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 30	Barn Lot 2 Con. 6 Georgina (NG)	129 + 600	Within proposed ROW potential for demolition or removal.	Displacement
BHF 31	Barn Georgina	Lot 21 Con. 6	Within 250m of proposed ROW potential for introduction of visual elements and isolation.	Disruption
BHF 32	Silo Georgina	Lot 21 Con. 6	Within 250m of proposed ROW potential for introduction of visual elements and isolation.	Disruption
BHF 33	Residence Lot 21 Con. 6 Georgina	141 + 400	Within proposed ROW potential for demolition or removal.	Displacement
BHF 34	Residence Georgina	Lot 21 Con. 7	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 35	Residence Georgina	Lot 21 Con. 7	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 36	Residence Lot 21 Con. 6 Georgina	141 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 37	Silo Lot 21 Con. 6 Georgina	141 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 38	Barn Ruin Lot 21 Con. 6 Georgina	141 + 500	Within proposed ROW potential for demolition or removal.	Displacement
BHF 39	Barn Georgina	Lot 24 Con. 6	Within 250m of proposed ROW potential for introduction of visual elements and isolation.	Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
BHF 40	Farmhouse Georgina	Lot 24 Con. 6	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 41	Barn Lot 24 Con. 6 Georgina	143 +300	Within proposed ROW potential for demolition or removal.	Displacement
BHF 42	Silo Lot 24 Con. 6 Georgina	143+300	Within proposed ROW potential for demolition or removal.	Displacement
BHF 43	Unidentified Lot 24 Con. 6 Georgina	143+300	Within proposed ROW potential for demolition or removal.	Displacement
BHF 44	Farmhouse Brock	Lot 4 Con. 14	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 45	Barn Lot 4 Con. 14 Brock	147 + 700	Within 25m of proposed ROW potential for demolition and/or introduction of potential visual, elements and isolation.	Displacement Disruption
BHF 46	Barn Lot 4 Con. 14 Brock	147 + 700	Within 25m of proposed ROW potential for demolition and/or introduction of potential visual, elements and isolation.	Displacement/ Disruption
BHF 47	Outbuilding Lot 4 Con. 14 Brock	147 + 700	Within 25m of proposed ROW potential for demolition and/or introduction of potential visual, elements and isolation.	Displacement/ Disruption
BHF 48	Farmhouse Thorah	Lot 17 Con. 1	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
BHF 49	Farmhouse Brock	Lot 11 Con. 14	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 1	Roadscape Herald Road	102 + 100	Within proposed ROW potential for introduction of an interchange.	Displacement
CLU 2	Farm Complex E Gwillim.	Lot 8 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 3	Roadscape Farr Avenue	104 + 700	Within proposed ROW potential for introduction of a road closure.	Displacement

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
CLU 4	Farm Complex E Gwillim.	Lot 12 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 5	Farm Complex E Gwillim.	Lot 13 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 6	Roadscape Doane Road	106 + 500	Within proposed ROW potential for introduction of an overpass.	Disruption
CLU 7	Farm Complex Lot 20 Con. 3 E Gwillim	108 + 400	Within 25m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Displacement/ Disruption
CLU 8	Roadscape Queensville Rd	108 + 500	Within proposed ROW potential for introduction of an interchange.	Displacement
CLU 9	Farm Complex E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 10	Farm Complex E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 11	Farm Complex E Gwillim.	Lot 21 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 12	Roadscape Holborn Road	110 + 500	Within proposed ROW potential for introduction of a road closure.	Displacement
CLU 13	Roadscape Boag Sdrd	112 + 600	Within proposed ROW potential for introduction of an underpass.	Disruption
CLU 14	Farm Complex E Gwillim.	Lot 31 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 15	Farm Complex E Gwillim.	Lot 34 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 16	Farm Complex E Gwillim.	Lot 35 Con. 3	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 17	Farm Complex Lot 4 Con. 4 Georgina (NG)	117 + 000	Within 25m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Displacement/ Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
CLU 18	Farm Complex Georgina (NG)	Lot 5 Con. 4	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 19	Farm Complex Georgina (NG)	Lot 6 Con. 4	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 20	Roadscape Glenwoods Ave	117 + 800	Within proposed ROW potential for introduction of a road closure.	Displacement
CLU 21	Waterscape Maskinonge River, Georgina	118 + 300	Within proposed ROW potential for introduction of visual elements.	Disruption
CLU 22	Waterscape Maskinonge River, Georgina	119 + 300	Within proposed ROW potential for introduction of visual elements.	Disruption
CLU 23	Roadscape Pollock Road	119 + 800	Within proposed ROW potential for introduction of an interchange.	Displacement
CLU 24	Roadscape Warden Ave.	121 + 500	Within proposed ROW potential for introduction of an overpass.	Disruption
CLU 25	Farm Complex Georgina (NG)	Lot 14 Con. 5	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 26	Roadscape Kennedy Road	123 + 500	Within proposed ROW potential for introduction of an overpass.	Disruption
CLU 27	Farm Complex Georgina (NG)	Lot 14 Con. 6	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 28	Roadscape Old Homestead Road	125 + 300	Within proposed ROW potential for overpass.	Disruption
CLU 29	Roadscape McCowan Road	126 + 900	Within proposed ROW potential for a road closure.	Displacement
CLU 30	Roadscape	Country Mile Lane, Georgina	Within 250m of proposed ROW potential for introduction of visual elements.	Disruption
CLU 31	Farm Complex Georgina (NG)	Lot 20 Con. 7	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 32	Roadscape Catering Road	127 + 500	Within proposed ROW potential for introduction of an overpass.	Disruption
CLU 33	Farm Complex Georgina (NG)	Lot 19 Con. 7	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF) AND
CULTURAL LANDSCAPE UNITS (CLUs)
(continued)

FEATURE #	FEATURE TYPE	LOCATION	POTENTIAL IMPACTS	POTENTIAL NET EFFECTS
CLU 34	Farm Complex Georgina (NG)	Lot 19 Con. 7	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 35	Waterscape Black River Georgina (NG)	129 + 100	Within proposed ROW potential for introduction of visual elements.	Disruption
CLU 36	Farm Complex Georgina	Lot 3/4 Con. 6	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 37	Farm Complex Georgina	Lot 11 Con. 6	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 38	Roadscape Stoney Batter Road	136 + 100	Within proposed ROW potential for introduction of an overpass.	Disruption
CLU 39	Farm Complex Georgina	Lot 20 Con. 6	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 40	Roadscape	Holmes Point Road, Georgina	Within 250m of proposed ROW potential for introduction of visual elements.	Disruption
CLU 41	Waterscape Pefferlaw Brook	141 + 500	Within proposed ROW potential for introduction of visual elements.	Disruption
CLU 42	Roadscape Riverbank Dr.	141 + 500	Within proposed ROW potential for road closure and new service road.	Displacement
CLU 43	Railscape Georgina	142+700	Within proposed ROW potential for introduction of visual elements.	Disruption
CLU 44	Farm Complex Lot 24 Con. 6 Georgina	143 + 300	Within proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Displacement/Disruption
CLU 45	Roadscape 14th Con., Brock	145 + 500	Within 25m of proposed ROW potential for introduction of visual elements.	Disruption
CLU 46	Roadscape Townline Brock -Thorah	147 + 300	Within 25m of proposed ROW potential for introduction of visual elements.	Disruption
CLU 47	Farm Complex Lot 4 Con. 14 Brock	147 +700	Within 25m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Displacement/Disruption
CLU 48	Roadscape 17th Sdrd, Brock	148 + 700	Within 25m of proposed ROW potential for introduction of visual elements.	Disruption

TABLE 1
SUMMARY OF POTENTIAL NET ENVIRONMENTAL
EFFECTS FOR ROW, 25m ZONE AND 250m ZONE
BUILT HERITAGE FEATURES (BHF_s) AND
CULTURAL LANDSCAPE UNITS (CLU_s)
(continued)

FEATURE # TYPE	FEATURE	LOCATION IMPACTS	POTENTIAL NET EFFECTS	POTENTIAL
CLU 49	Farm Complex Brock (Thorah)	Lot 17 Con. 1	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 50 Former r.o.w	Roadscape Brock (Thorah)	150 + 200 Lot 15 Con. 1	Within 250m of proposed ROW potential for introduction of potential visual elements.	Disruption
CLU 51	Farm Complex Brock	Lot 10 Con. 14	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 52	Farm Complex Brock	Lot 11 Con. 14	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 53	Roadscape Former r.o.w	152 + 500 Brock	Within 250m of proposed ROW potential for introduction of visual elements.	Disruption
CLU 54	Farm Complex Brock (Thorah)	Lot 11 Con. 1	Within 250m of proposed ROW potential for introduction of visual, audible, or atmospheric elements and isolation.	Disruption
CLU 55	Railscape Former r.o.w	128 + 700 Georgina (NG)	Within proposed ROW potential for introduction of visual elements.	Disruption

1.6 Proposed mitigation measures

In deriving route alternatives efforts were made to avoid cultural heritage features. Inevitably a small number of cultural heritage features will be directly or indirectly affected by the proposed right-of-way and appropriate mitigation of adverse effects will be adopted. In undertaking detailed design of the preferred route affected cultural heritage resources will be reviewed to further assess or refine the need for and identification of appropriate mitigation measures.

Any mitigation measures for potential impacts to cultural heritage resources take into consideration OMCzCR guidelines. OMCzCR has advised in a *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (October 1992) that:

"Mitigation measures should be developed from the evaluation process and should include, at a minimum, the following components:

- avoidance of documented heritage resources;*
- avoidance of moderate to high potential heritage resource areas, where assessment has not been possible; description of "buffer zones" with MCC guidance to protect heritage resources;*
- description of mitigation measures proposed where site impacts are unavoidable. The following are examples of these measures:*
 - excavation in the case of archaeological sites;*
 - sympathetic alteration and reversible alteration of built heritage sites;*
 - compatible design of new construction where it is within close proximity to built heritage sites in terms of materials, colours, architectural treatments, form, size, massing and siting;*
 - satisfactory documentation in advance of demolition or relocation in the case of built heritage or cultural landscapes, when retention is found to be unfeasible after full investigation.*
- where required, the hiring of qualified heritage consultants to conduct specific resource mitigation and to write up the results of that work;*
- opportunities for MCC staff to evaluate heritage resource assessments prior to the submission of an environmental assessment."*

Right-of-way:

Where built heritage features and cultural landscapes are to be displaced historical and architectural research will be undertaken to further assess the

heritage value and significance of such features. This documentation will be undertaken in advance of demolition or relocation. Additional mitigation measures may be agreed to with affected parties or reviewing agencies.

Mitigation measures to ameliorate adverse impacts to affected roadscares either through closure, interchange, bridge or underpass construction may include, where appropriate:

- retention, re-siting and/or replacement in kind of all types of fencing,
- retention of substantial deciduous hedgerows associated with affected roadscares,
- new ditching to be planted with grass and or marsh plantings to soften edge of road.

These mitigative measures have the potential to soften the typically, “hard” edges of a new engineered road surface into the cultural landscape.

Qualified heritage consultants may be retained to conduct specific resource mitigation and to document the results of that work

Off-route 25 metre:

Where displacements occur within the off-route 25 metre area the previously described measures for the right-of-way will be considered and adopted appropriately.

Where the construction of interchanges, ramps, bridges, culverts and overpasses are proposed in close proximity to built heritage features MTO will attempt to consider compatible design of new construction in terms of materials, colours, architectural treatments, form, size, massing and siting.

Off-route 25 to 250 metre

Off-route disruption will generally occur in the form of noise and dust impacts, i.e., the introduction of audible or atmospheric elements that are not in character with the settings of cultural heritage features. These disruptions

not in character with settings of cultural heritage features will generally be permanent.

The mitigative measures to counter these adverse effects such as berms, fencing or other forms of screening may result in correspondingly permanent changes in the environment.

Disruption may also occur in the form of visual impacts, i.e., the introduction of the right-of-way, associated structures and moving traffic, which is not in character with cultural heritage features and their settings. These visual disruptions not in character with cultural heritage features and their settings will be permanent.

1.7 Monitoring and contingency measures

In undertaking detailed design of the preferred route affected cultural heritage resources will be reviewed to further assess or refine the need for and identification of appropriate mitigation measures.

In addition to possible off-route mitigation measures noted previously, impact management may encompass programs for monitoring nuisance effects. According to the OMCzCR's *Guidelines on the Man-Made Heritage Component of Environmental Assessments*, effective compliance reporting and monitoring should include commitments to undertake:

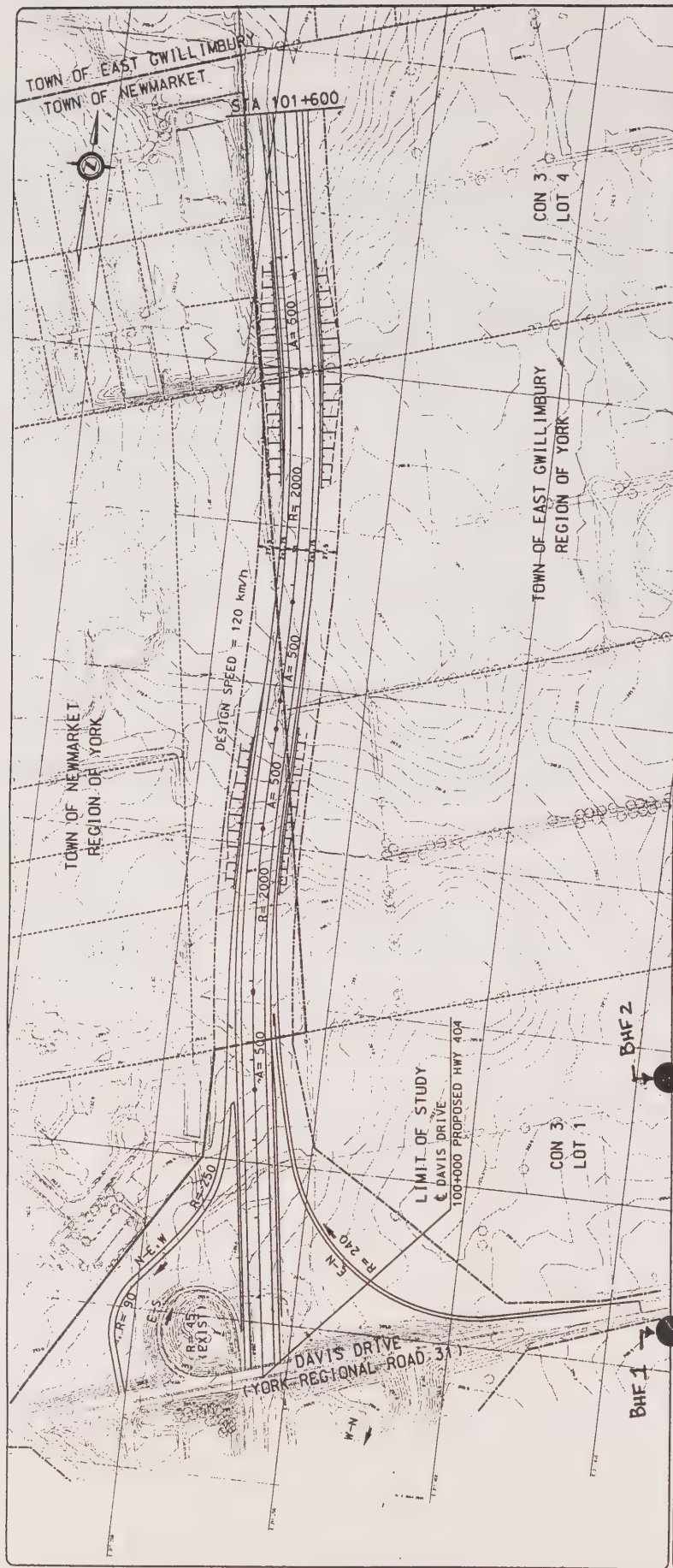
- “• *updating MCC about construction changes which may impact on heritage resources.*
- *reference to MCC technical manuals, policies and guidelines.*
- *providing a statement describing the nature of the monitoring procedures (i.e., monitoring to be conducted by proponents' staff or other agencies, or consultants, in the environmental assessment document”*

Additionally, according to the OMCzCR's *Guidelines on the Man-Made Heritage Component of Environmental Assessments*, contingency plans should be included in the environmental assessment documentation and should address the following:

- “• prompt notification to MCC staff in the event of an accidental heritage resource discovery during construction;*
- mitigation methods for the accidental damage to or destruction of heritage resources or any other MCC interests during construction;*
- prompt notification in the event that human remains are encountered during construction, the proponent must also immediately notify the Registrar of the Cemeteries Regulation Units, Ministry of Consumer and Commercial Relations;*
- the employment of qualified consultants to deal with contingencies.”*

Given the existing levels of survey within the right-of-way it is unlikely that unforeseen built heritage features or interior features will be discovered after detailed assessment for deriving suitable mitigation measures. As a contingency measure, MTO may retain a qualified heritage consultant to assess the heritage significance of any newly discovered heritage resources and recommend appropriate mitigation measures.

Map 1: Cultural Heritage Resources (Comprising Plates 1 – 32)



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

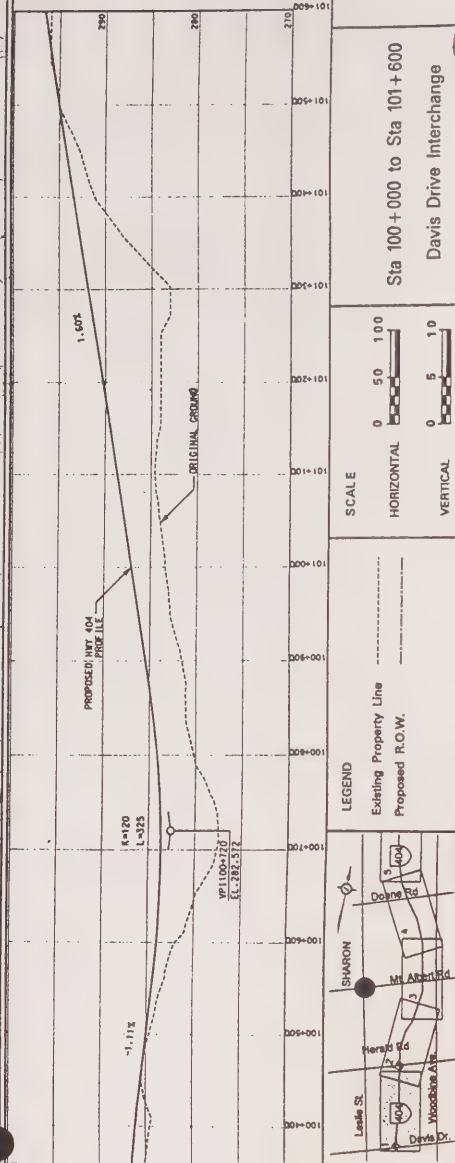
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Heritage Conservation and Planning Consultants



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.



SCALE

HORIZONTAL

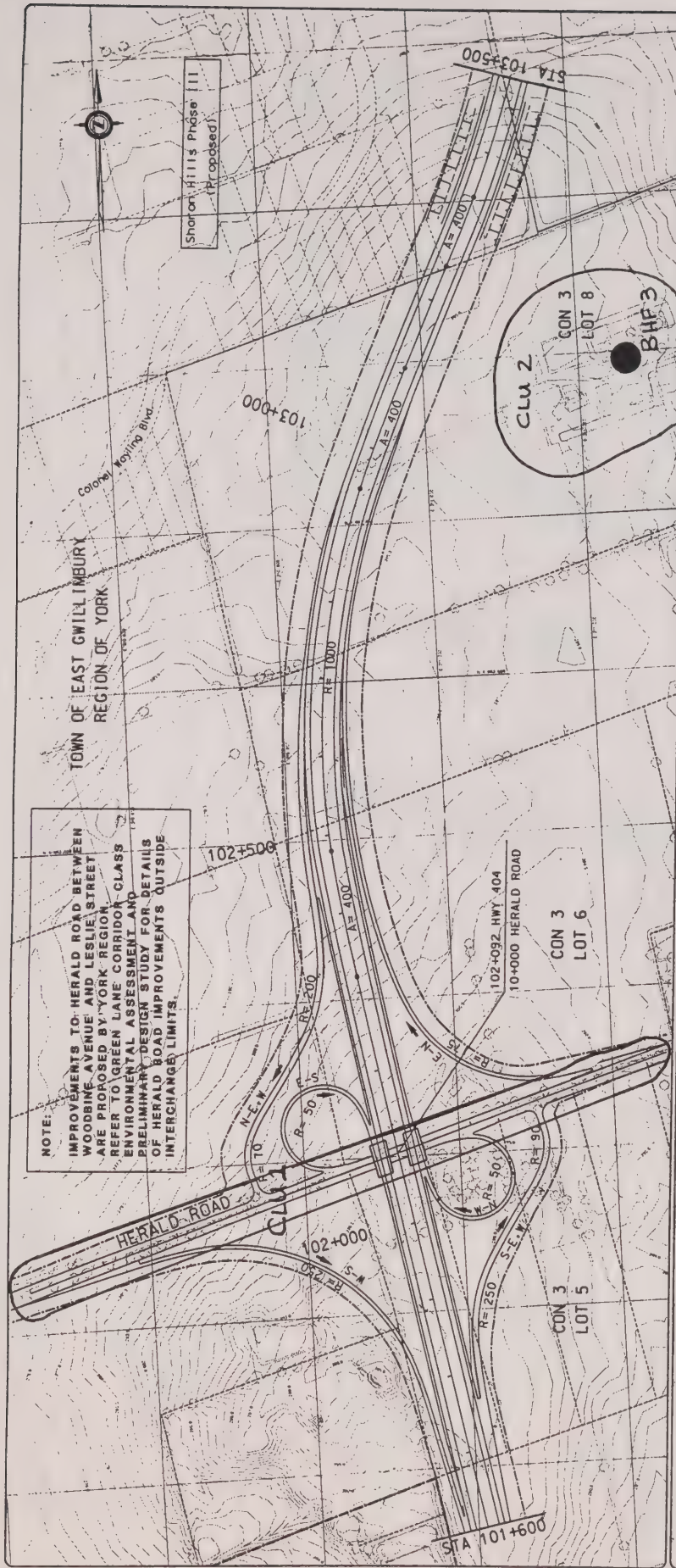
VERTICAL

PLATE

1

Sta 100+000 to Sta 101+600

Davis Drive Interchange



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

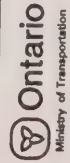
BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

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HIGHWAY 404
EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.

SCALE

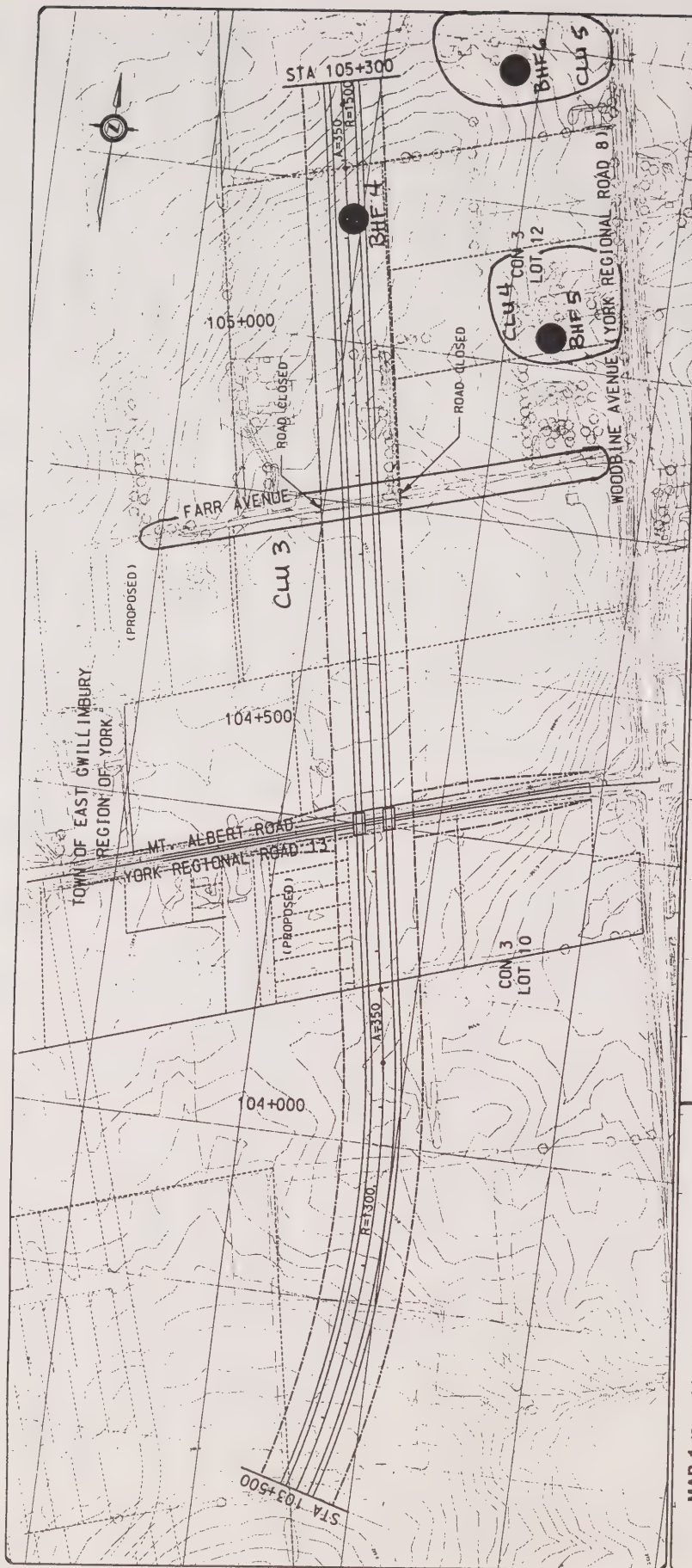
HORIZONTAL
0 50 100

VERTICAL
0 5 10

Sta 101+600 to Sta 103+500
Herald Road Interchange

PLATE

2



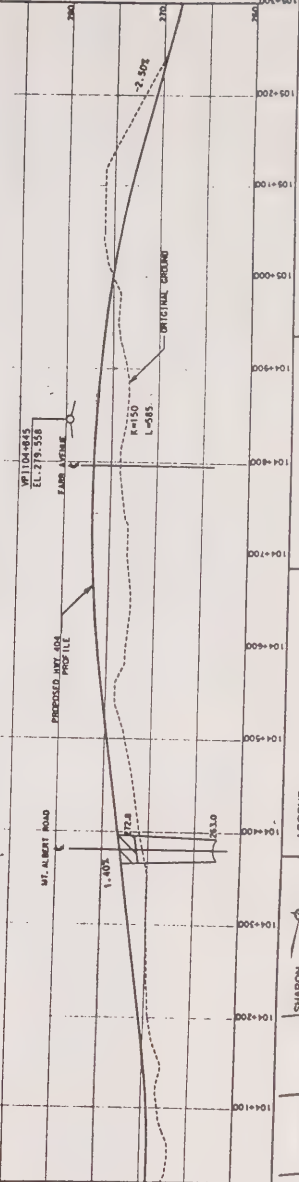
MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

- BUILT HERITAGE FEATURES (BHF)
- CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997
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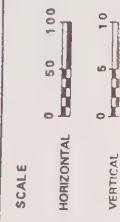


**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND
Existing Property Line
Proposed R.O.W.

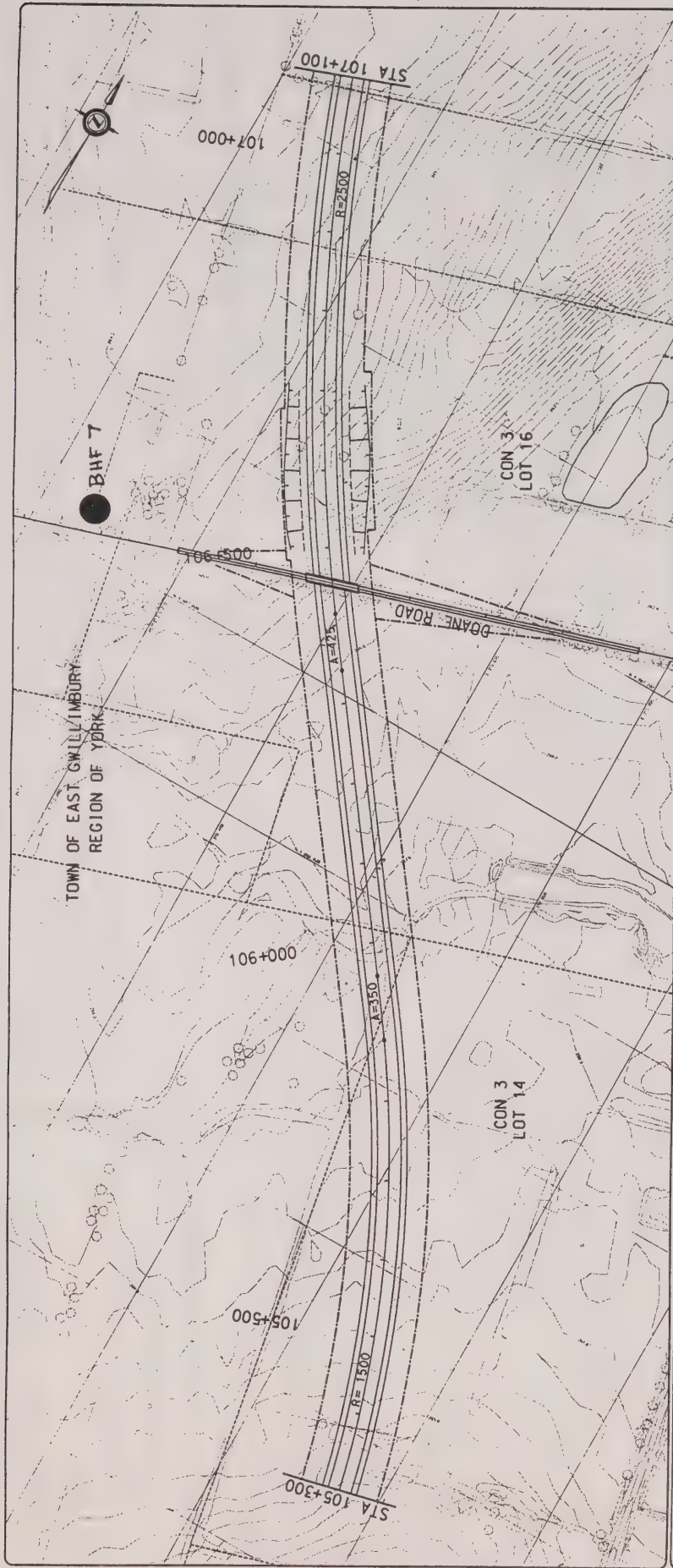


Sta 103+500 to Sta 105+300

Mt. Albert Road

PLATE

3



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

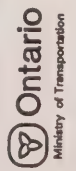
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

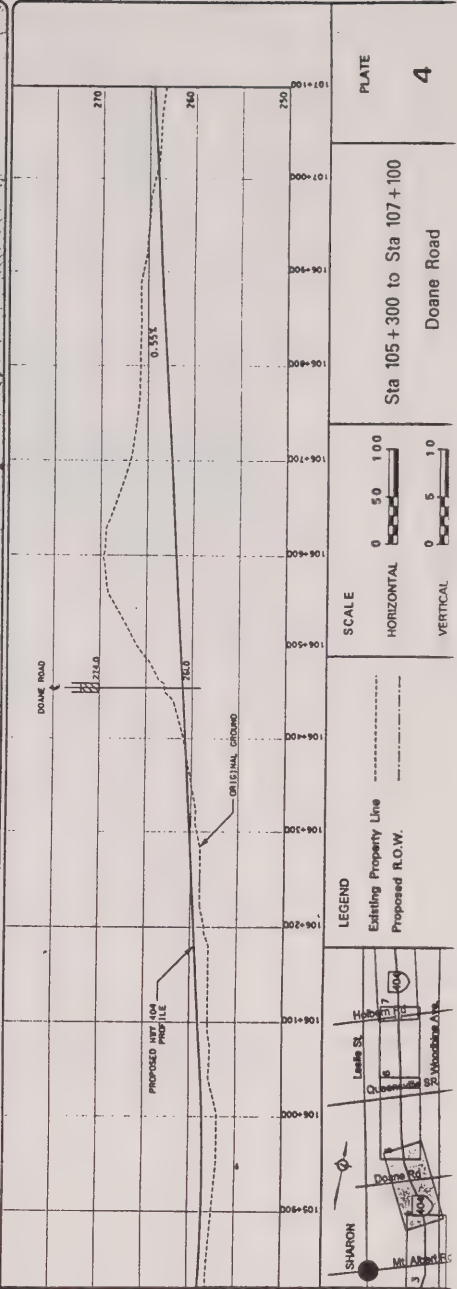
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HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

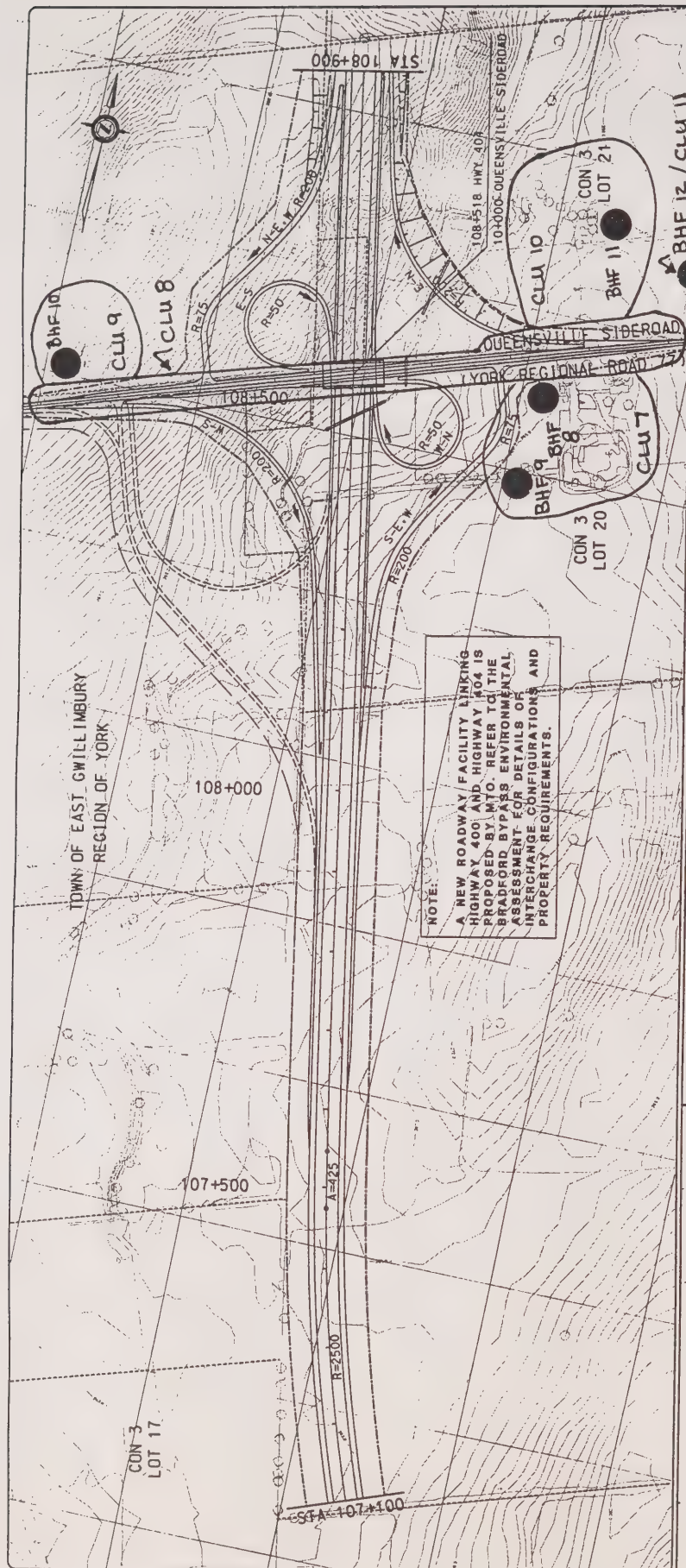


PLATE

4

Sta 105+300 to Sta 107+100

Doane Road



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

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HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

LEGEND

Existing Property Line
Proposed R.O.W.



SCALE

HORIZONTAL
0 50 100

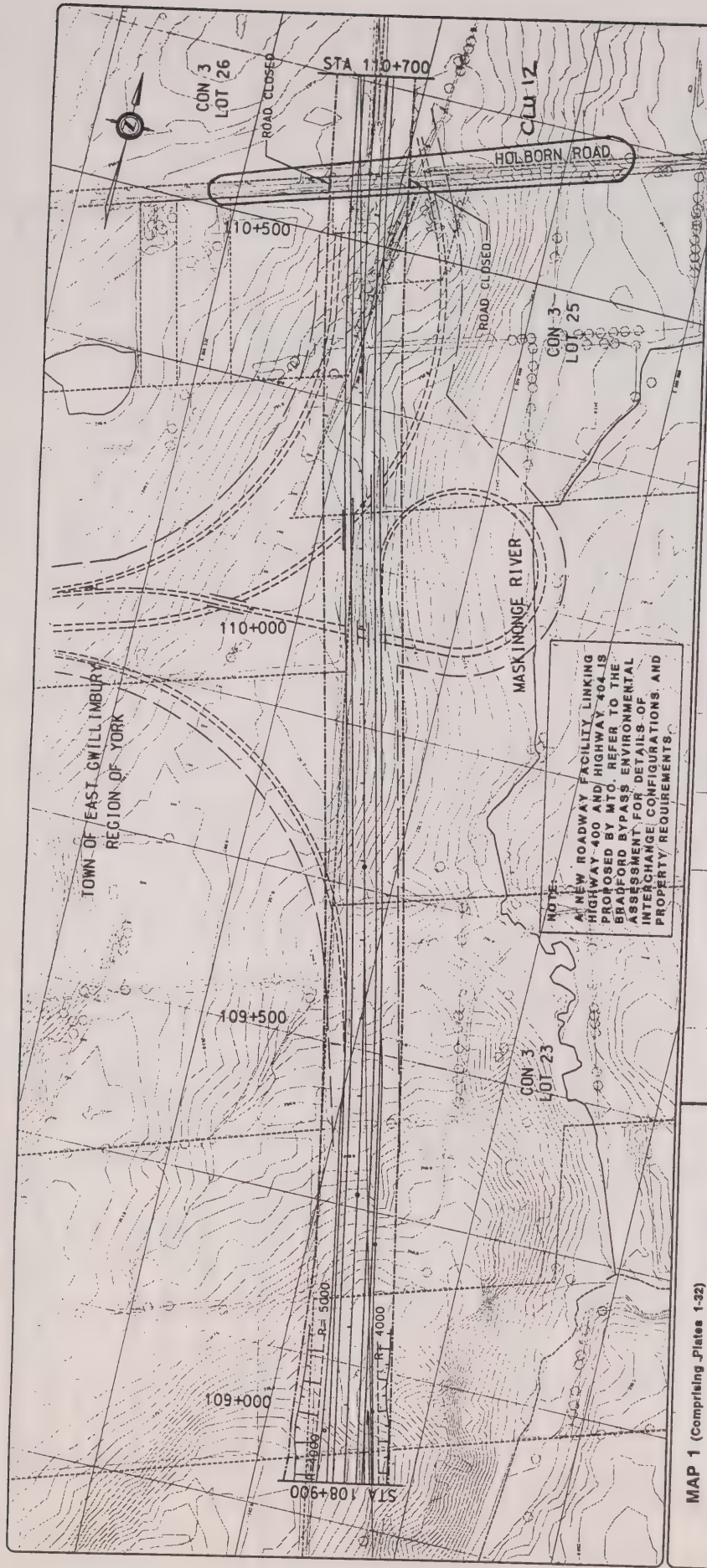
VERTICAL
0 5 10

PLATE

5

Sta 107+100 to Sta 108+900

Queensville Interchange



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1987

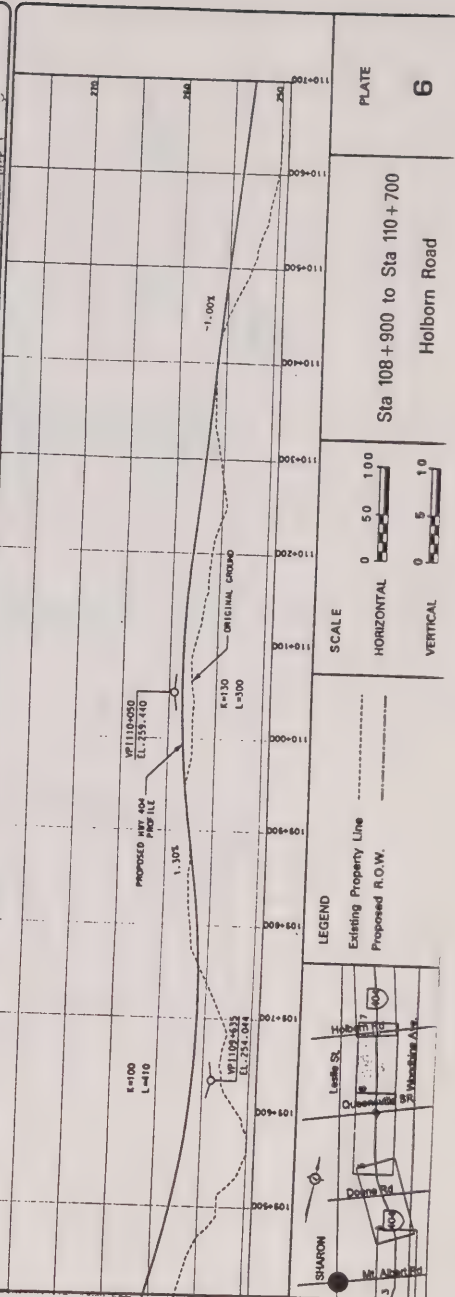
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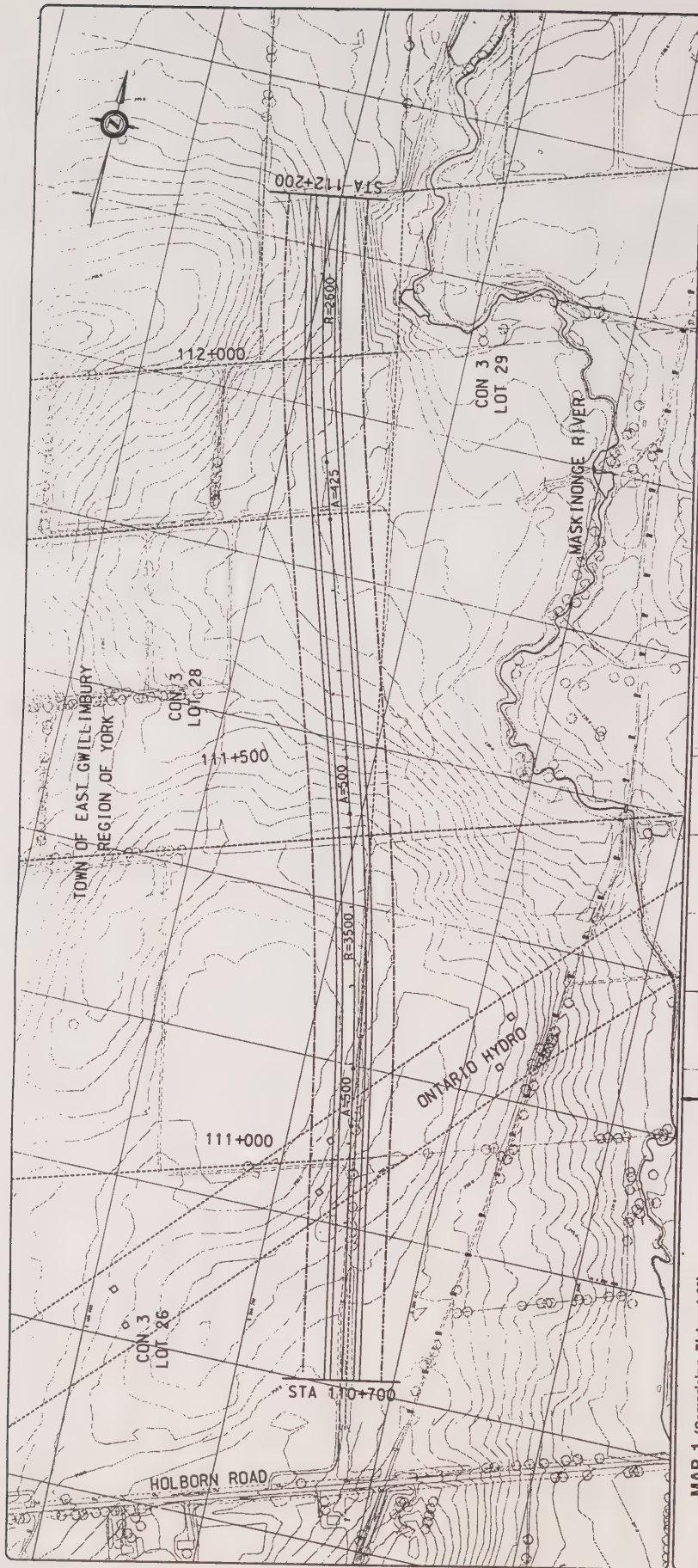


**HIGHWAY 404
EXTENSION**

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



Sta 108+900 to Sta 110+700
Holborn Road



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

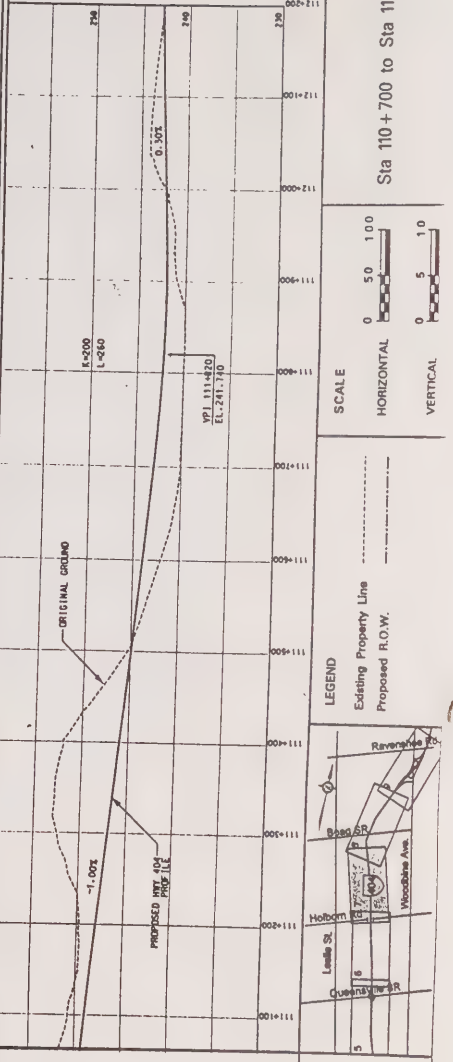
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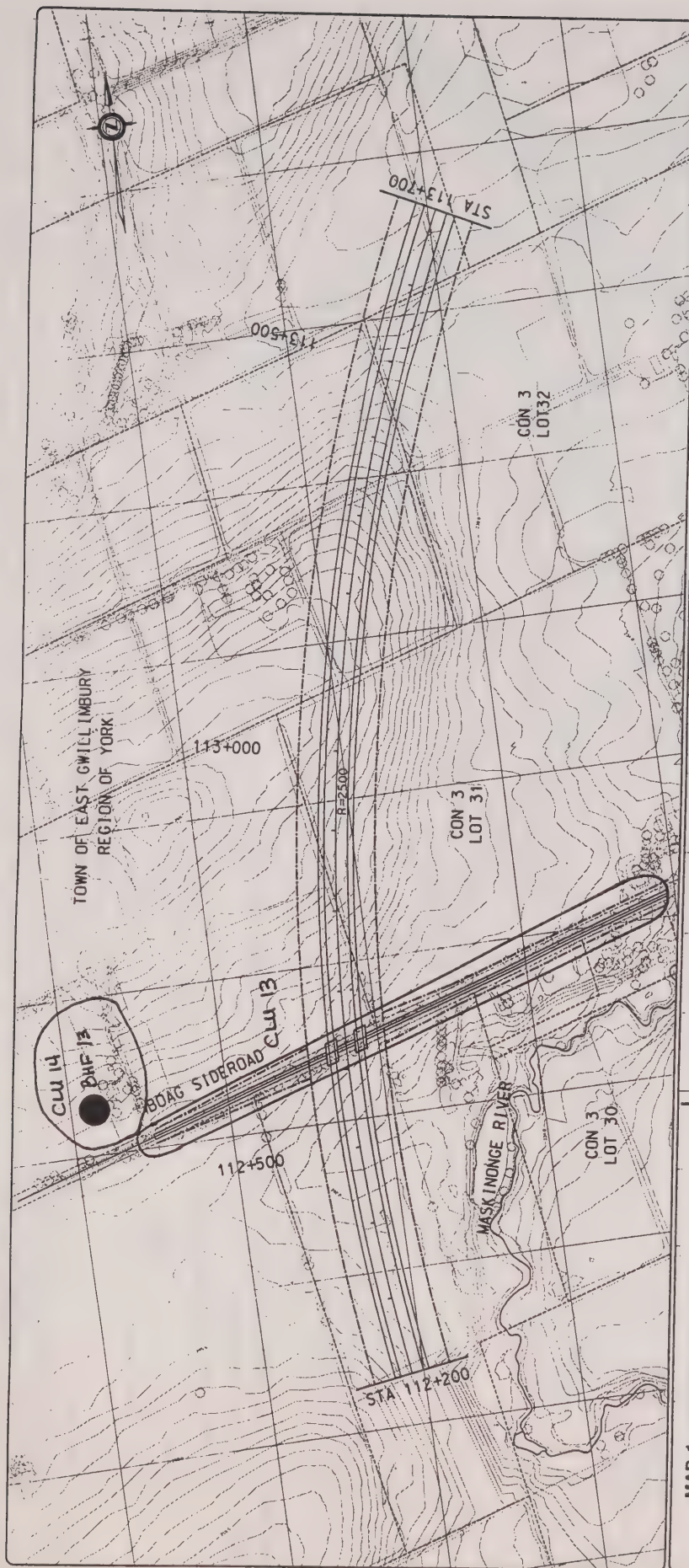


HIGHWAY 404 EXTENSION

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



Sta 110+700 to Sta 112+200



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

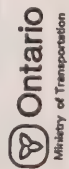
BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1987

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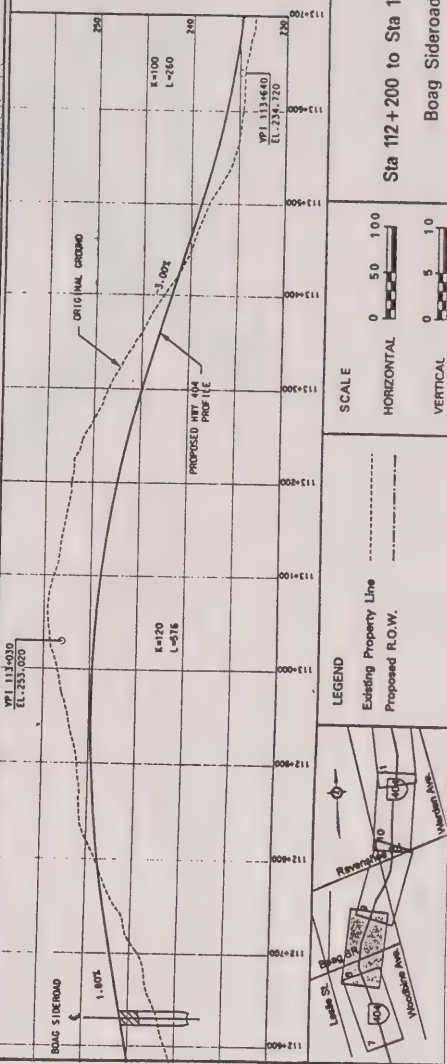
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COLE, SHERMAN

HIGHWAY 404 EXTENSION

Devils Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.

SCALE

HORIZONTAL

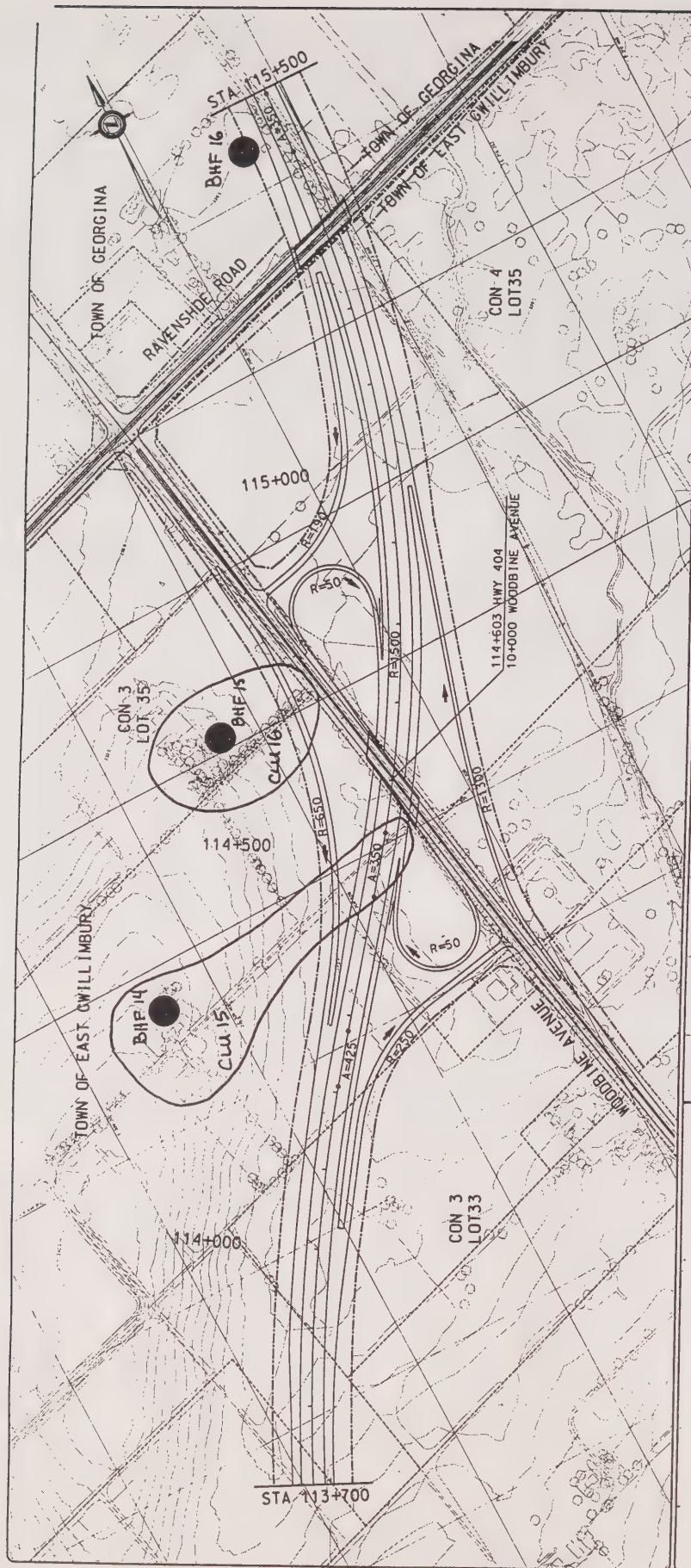
VERTICAL

PLATE

8

Sta 112+200 to Sta 113+700

Boag Sideroad



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

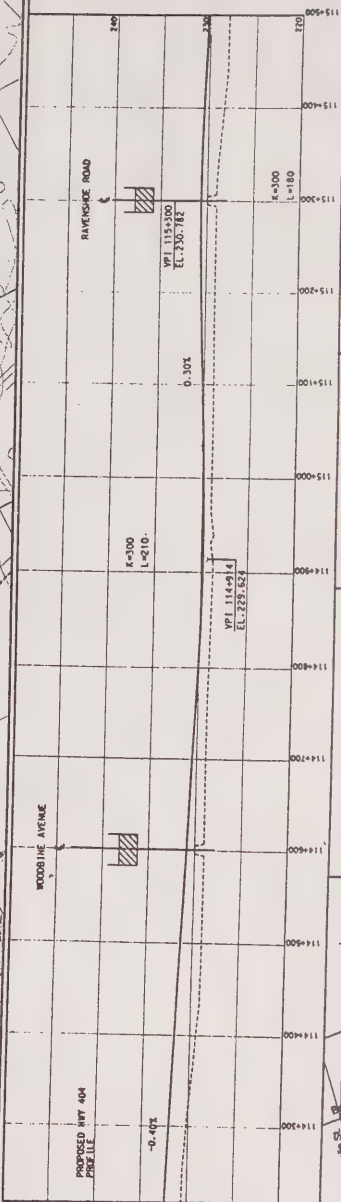
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HIGHWAY 404 EXTENSION

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

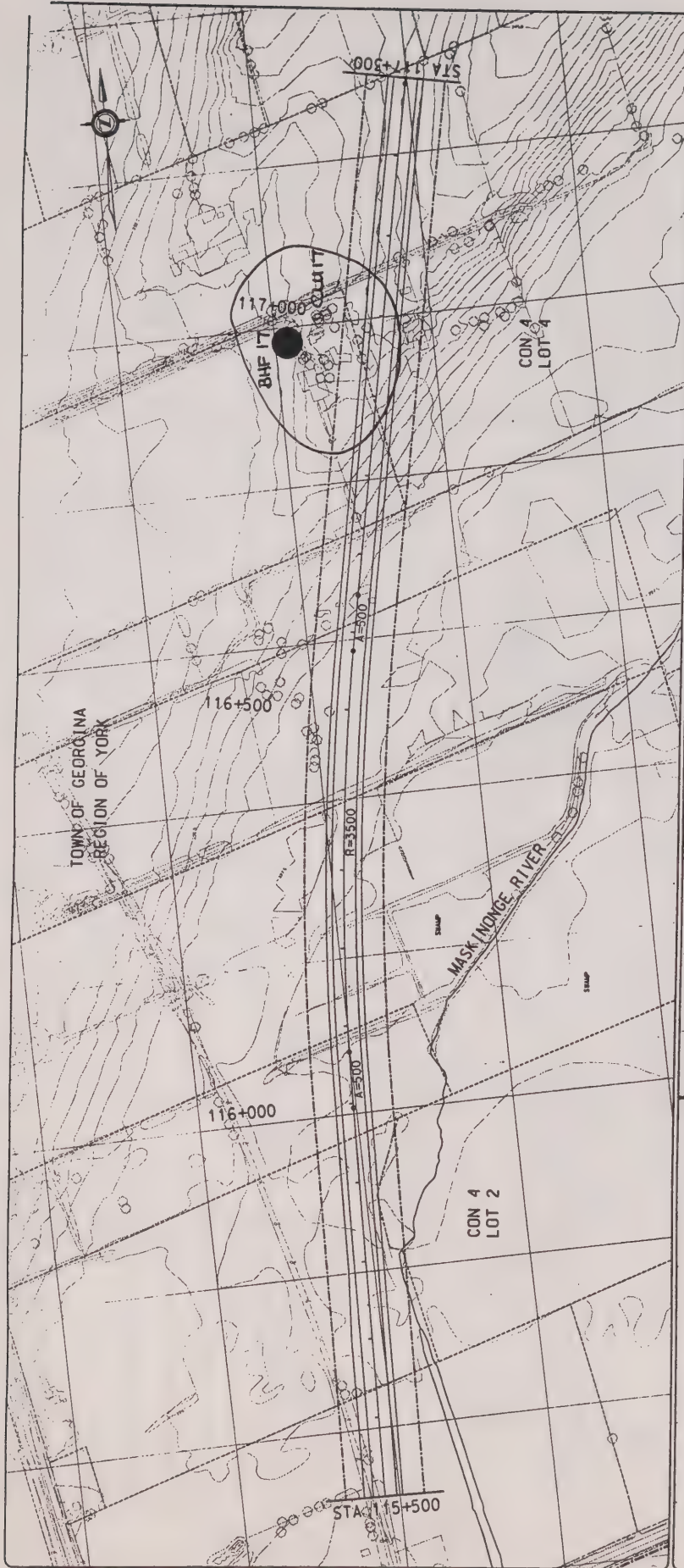
Existing Property Line
Proposed R.O.W.



Sta 113+700 to Sta 115+500
Woodbine Avenue Interchange

PLATE

9



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

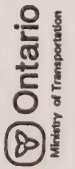
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

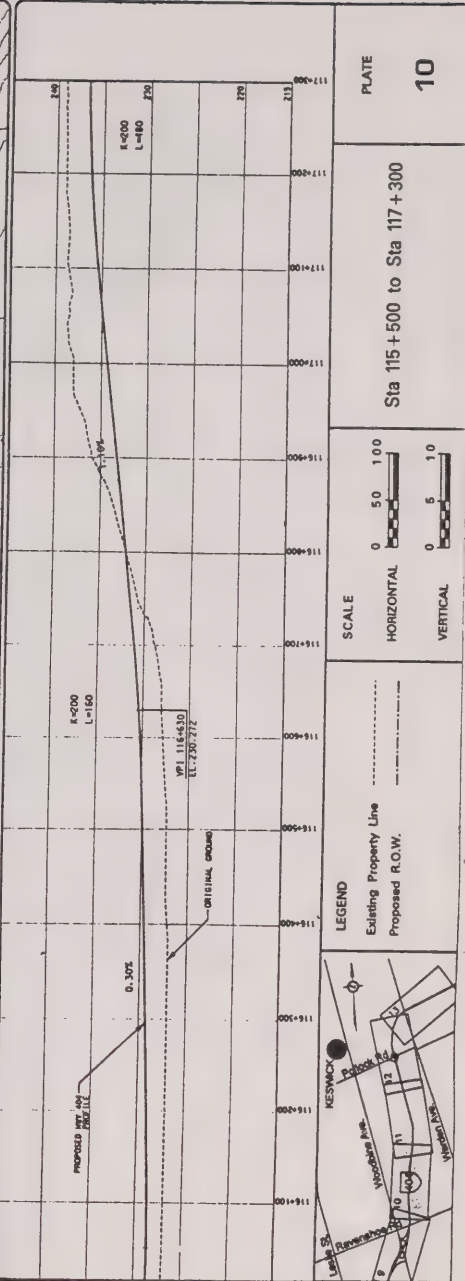
JUNE 1997

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**HIGHWAY 404
EXTENSION**
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



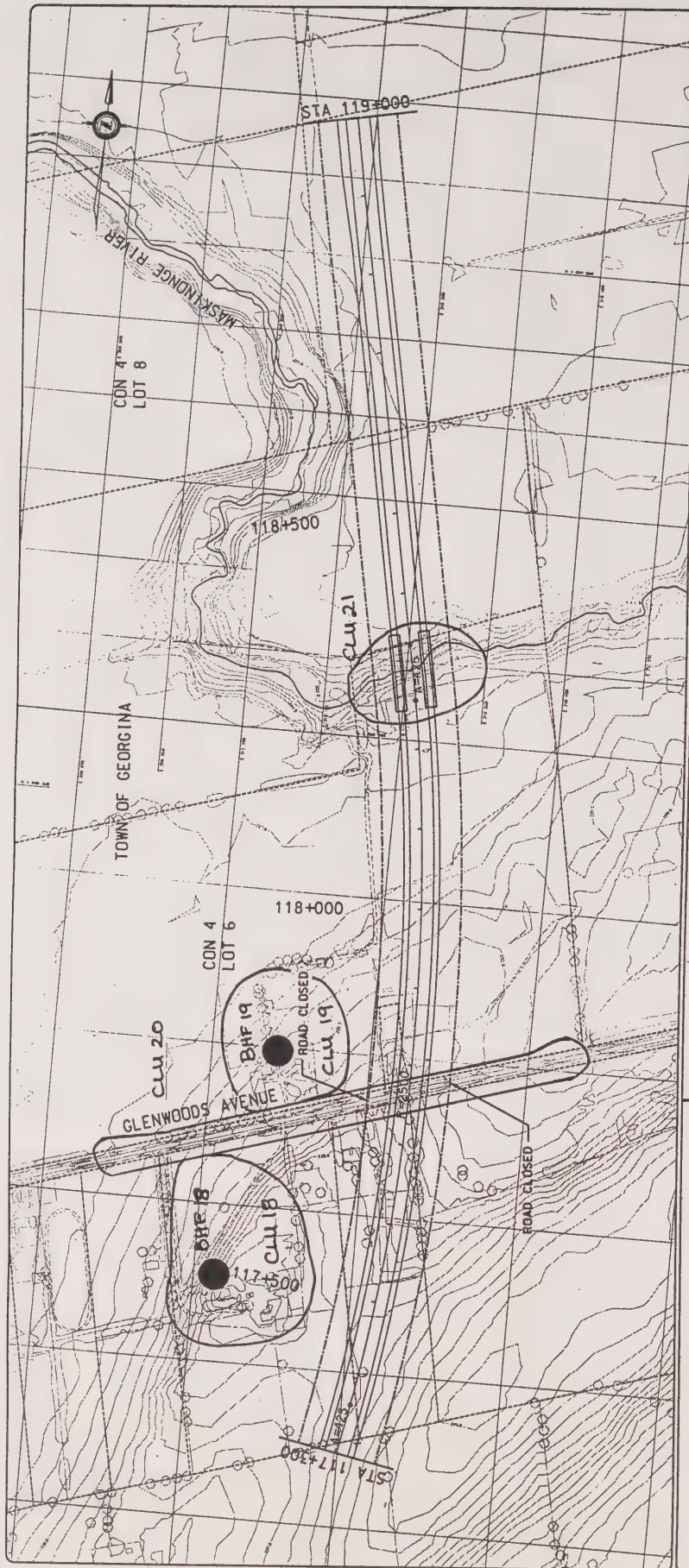
PLATE

10

Sta 115+500 to Sta 117+300

SCALE
HORIZONTAL
VERTICAL

0 50 100
0 5 10



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

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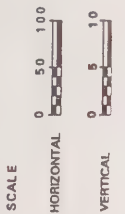


**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

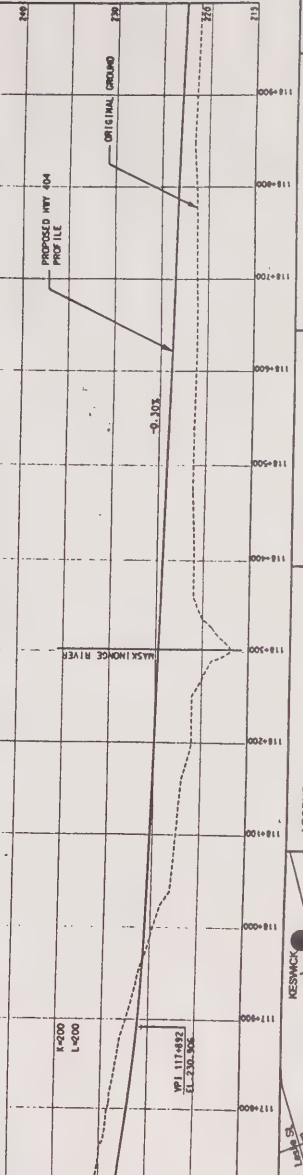
LEGEND

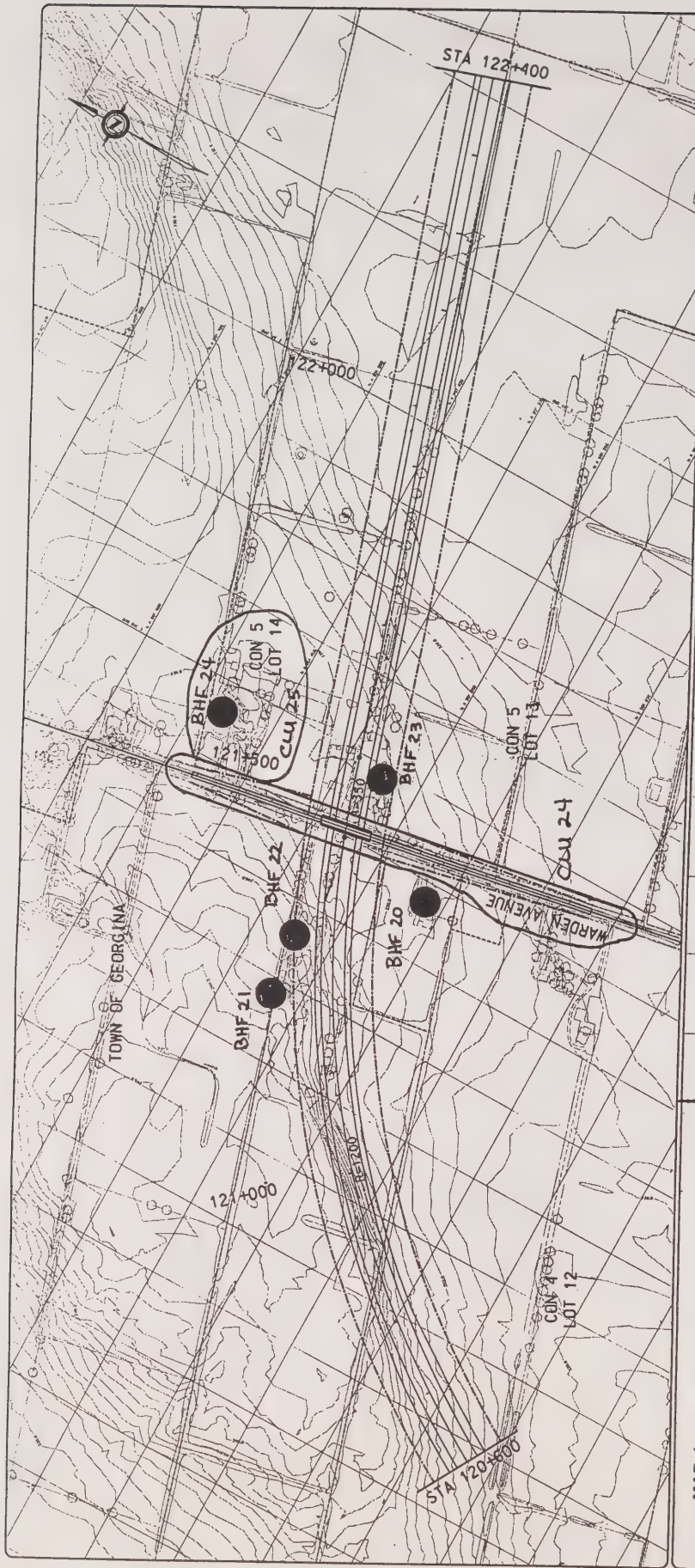
Existing Property Line
Proposed R.O.W.



Sta 117 + 300 to Sta 119 + 000
Glenwoods Avenue

PLATE
11





MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

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Heritage Conservation and Planning Consultants



COLE SHERMAN

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

MARKER AVENUE

ORIGINAL GROUND

WT 122+330
CL 230+18

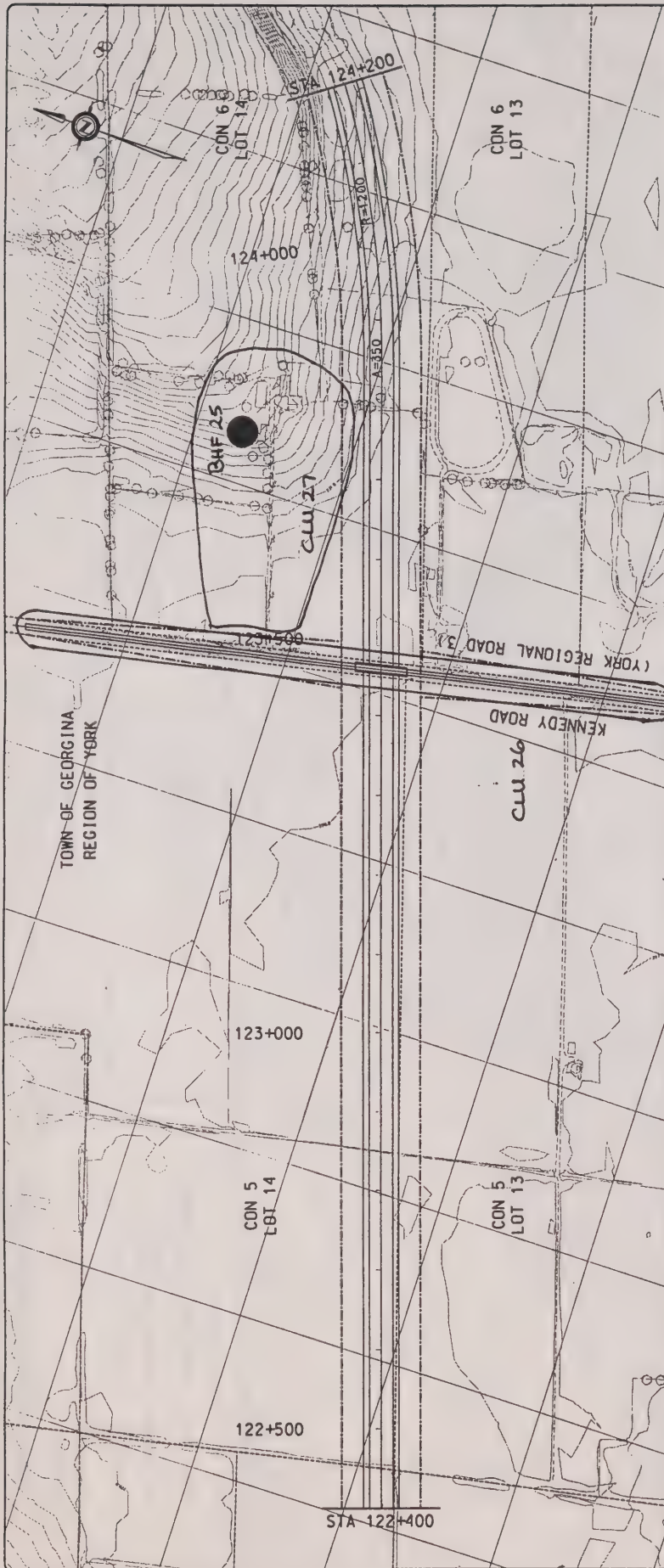
WT 122+150
EL 228.68

LEGEND
Existing Property Line
Proposed R.O.W.



PLATE
Sta 120+600 to Sta 122+400
Warden Avenue

SCALE
HORIZONTAL
VERTICAL



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

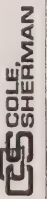
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

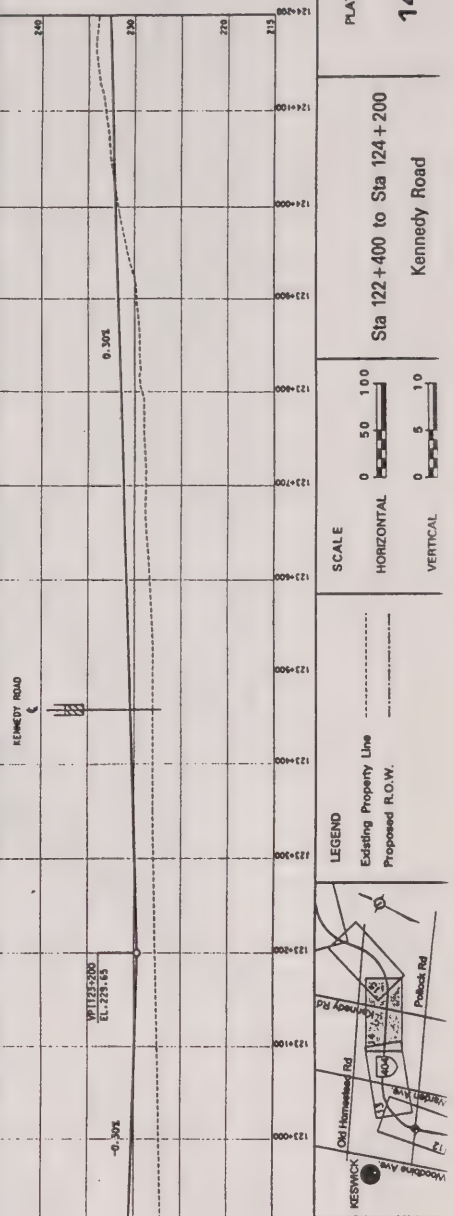
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Unterman McPhail Cuning Associates
Heritage Conservation and Planning Consultants



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

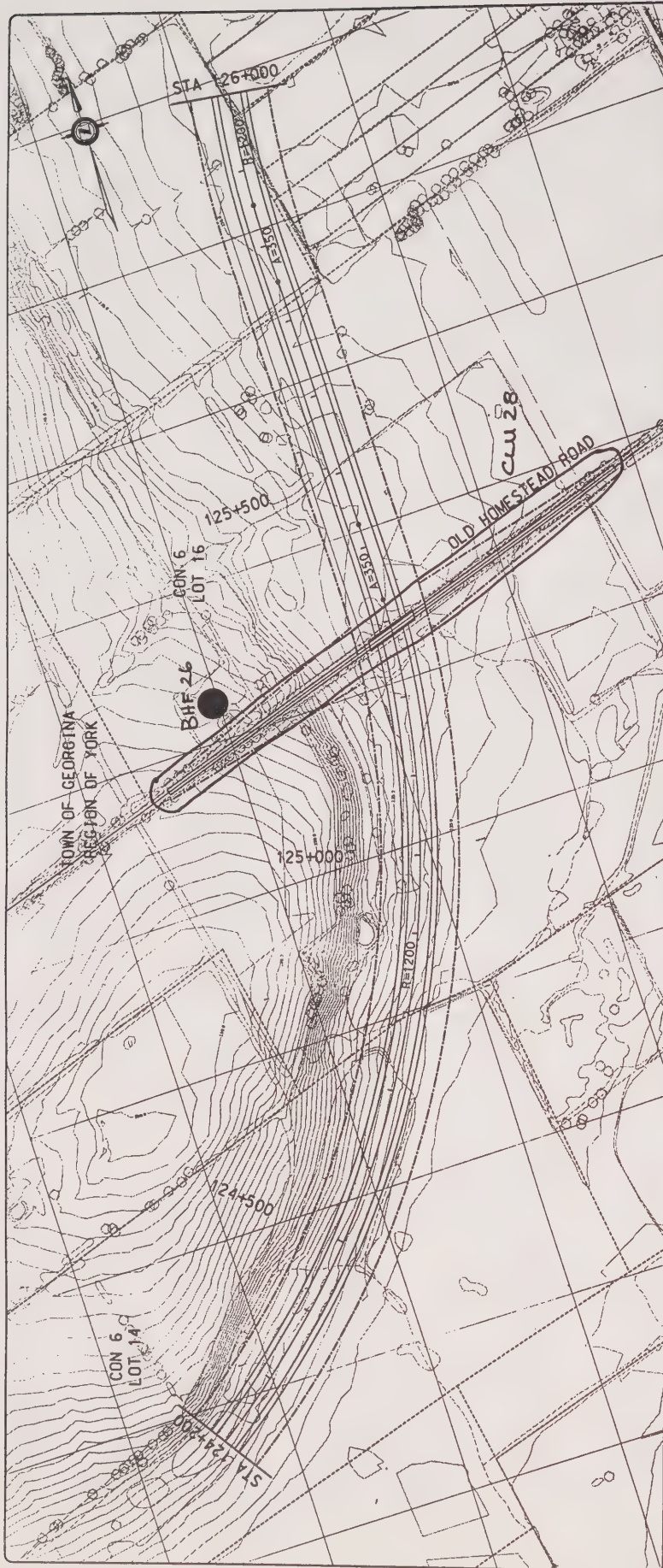


PLATE

Sta 122+400 to Sta 124+200

Kennedy Road

14



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

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HIGHWAY 404 EXTENSION

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment

OLD HOMESTEAD ROAD

WT 125+375
CL 238+18

-0.10%

LEGEND

Existing Property Line
Proposed R.O.W.



SCALE

HORIZONTAL
0 50 100

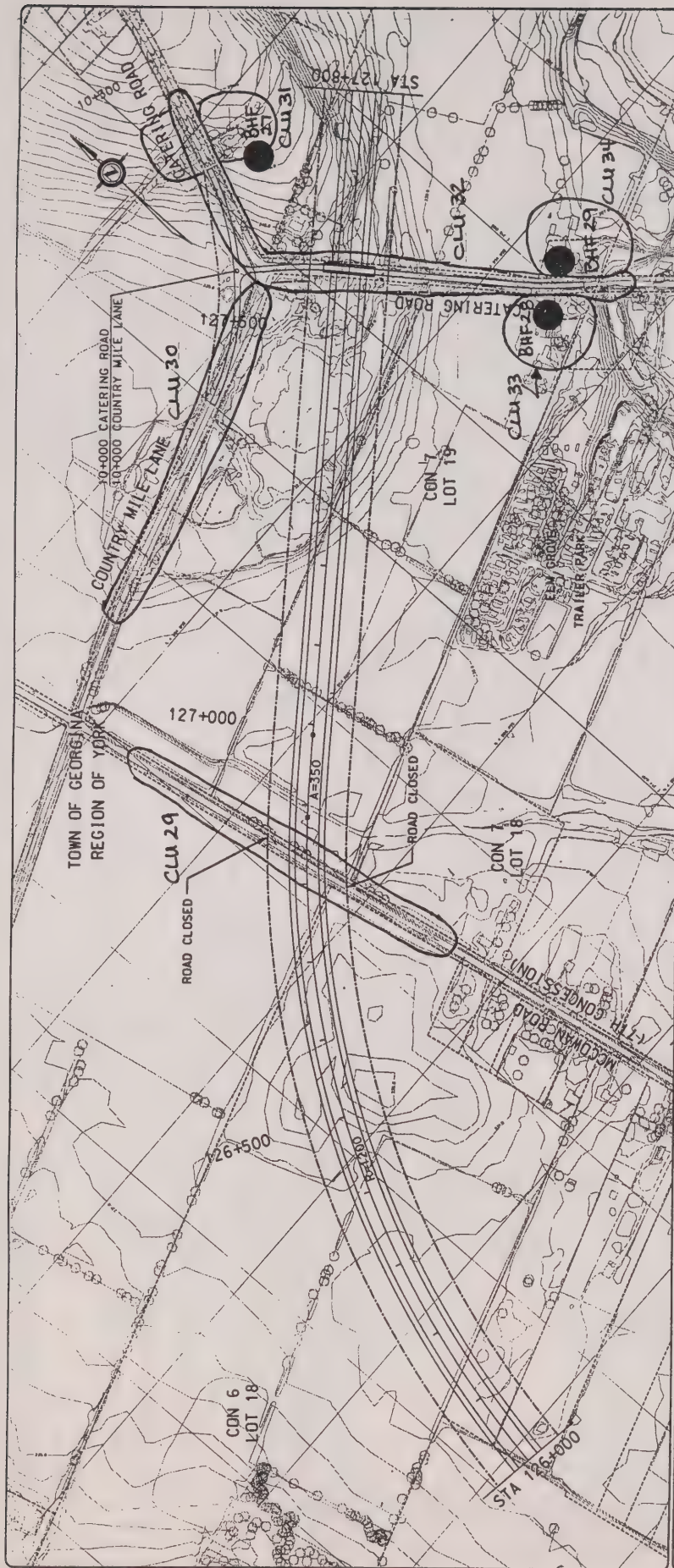
VERTICAL
0 5 10

PLATE

Sta 124+200 to Sta 126+000

Old Homestead Road

15



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

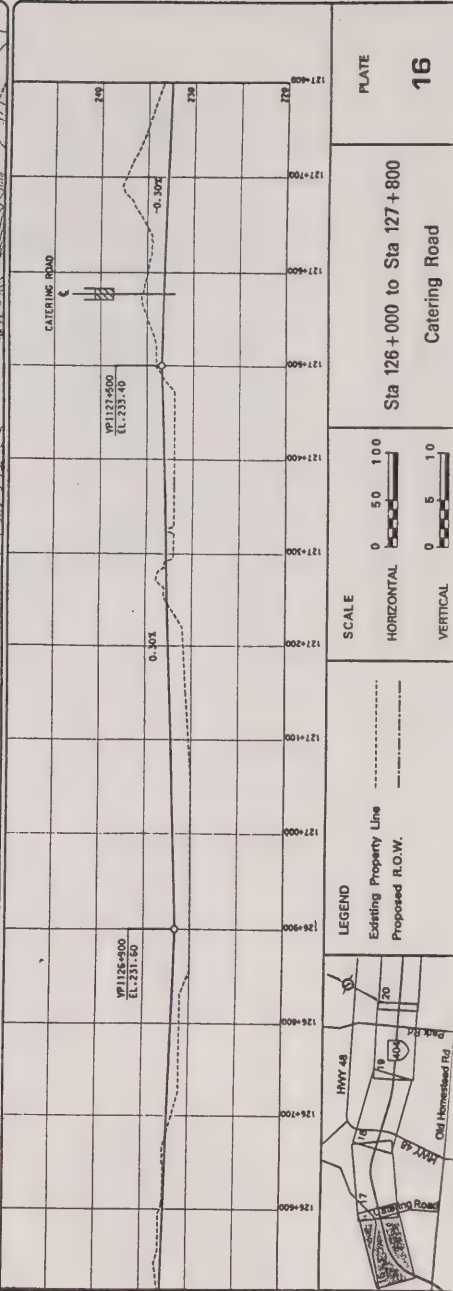
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HIGHWAY 404 EXTENSION

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.

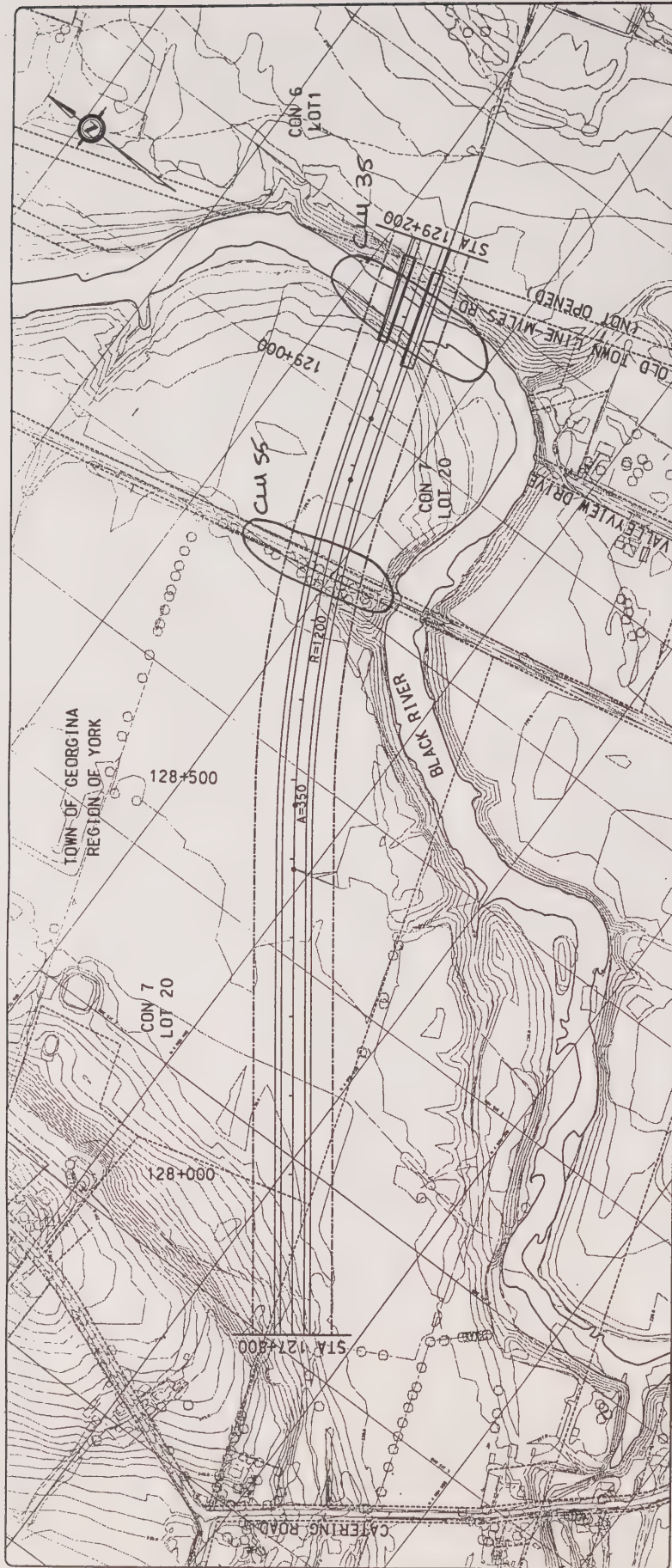


PLATE

Sta 126+000 to Sta 127+800

Catering Road

16



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

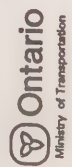
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

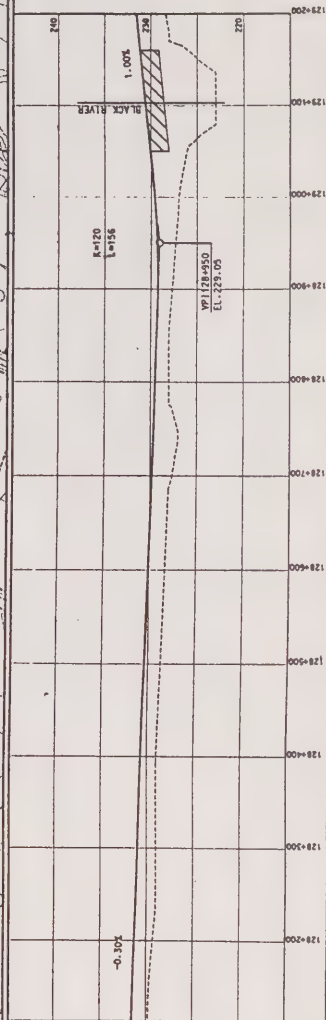
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HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.



SCALE

HORIZONTAL
0 50 100

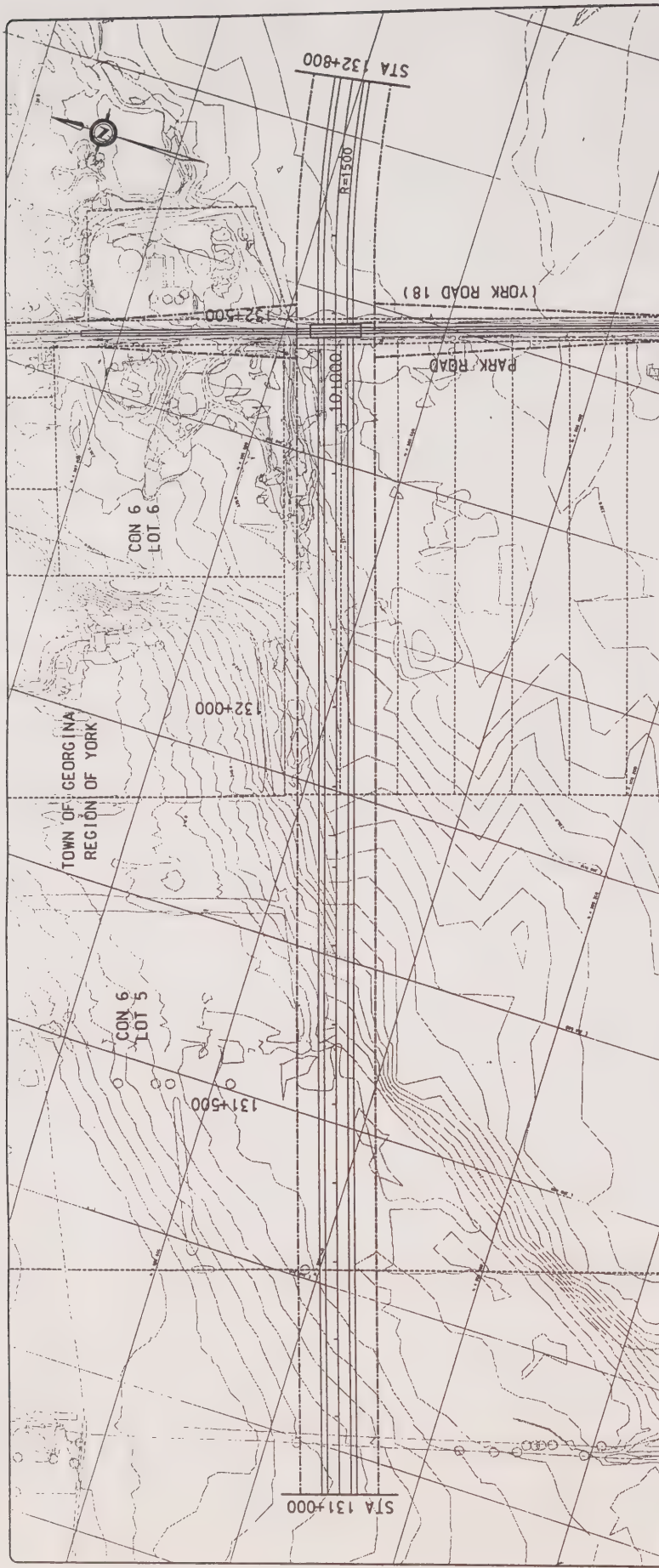
VERTICAL
0 5 10

Sta 127 + 800 to Sta 129 + 200

Black River

PLATE

17



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

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**HIGHWAY 404
EXTENSION**

Devils Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND
Existing Property Line
Proposed R.O.W.

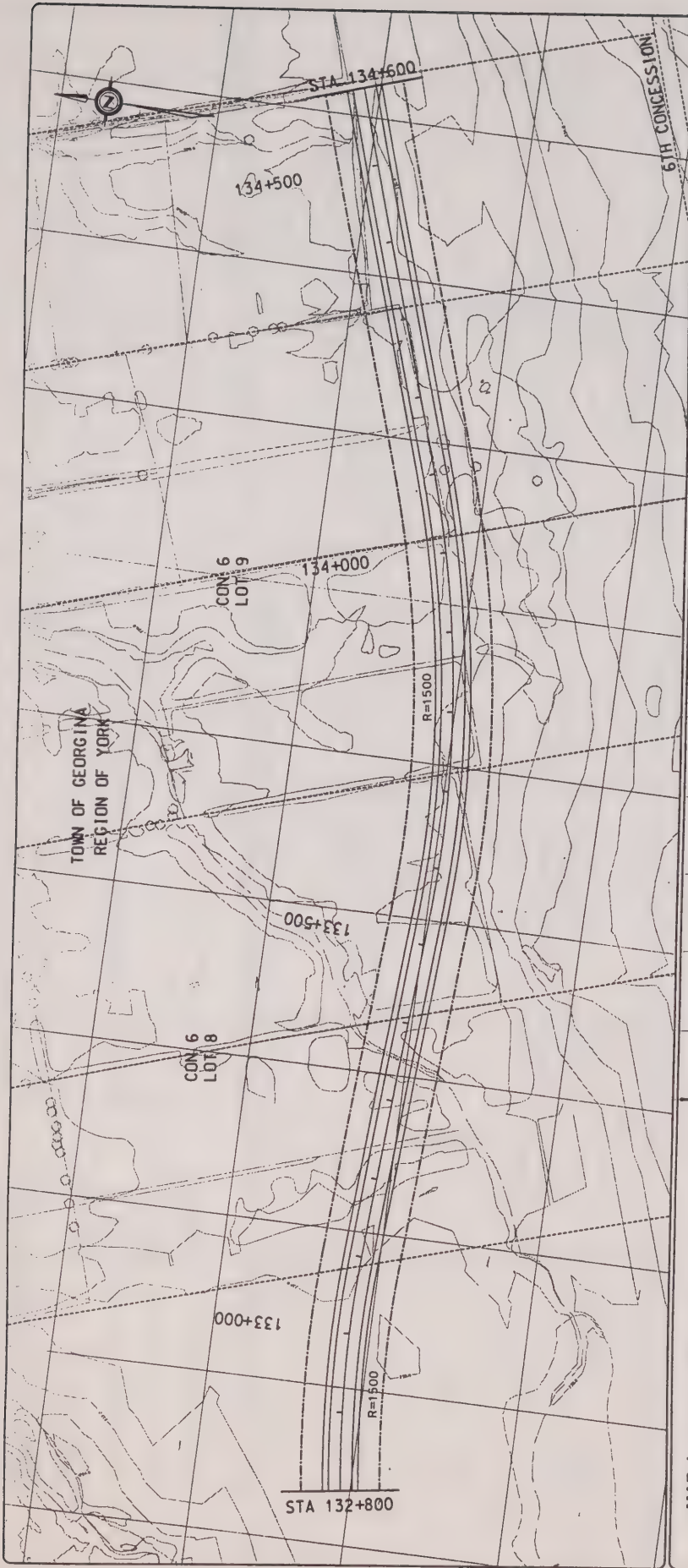


Sta 131+000 to Sta 132+800

Park Road

PLATE

19



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

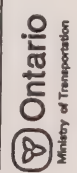
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

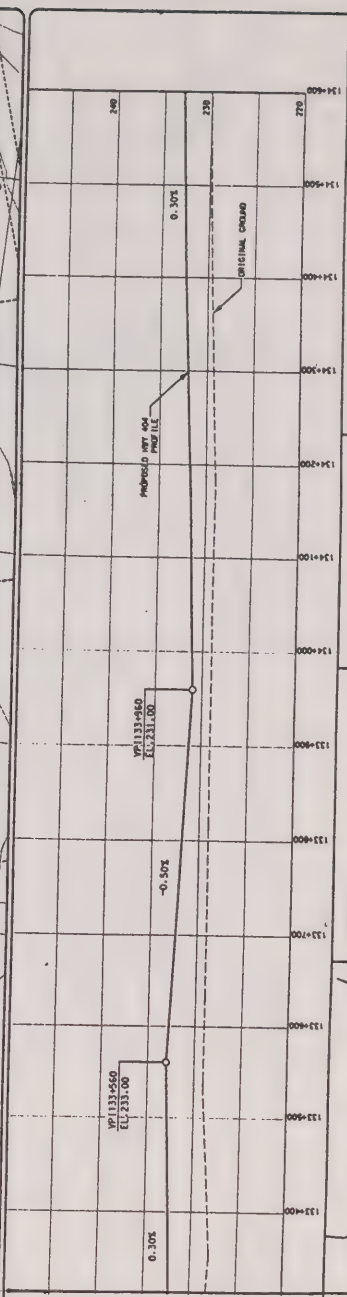
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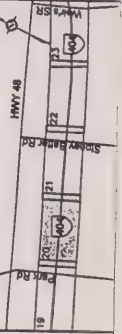
**HIGHWAY 404
EXTENSION**

Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.



PLATE

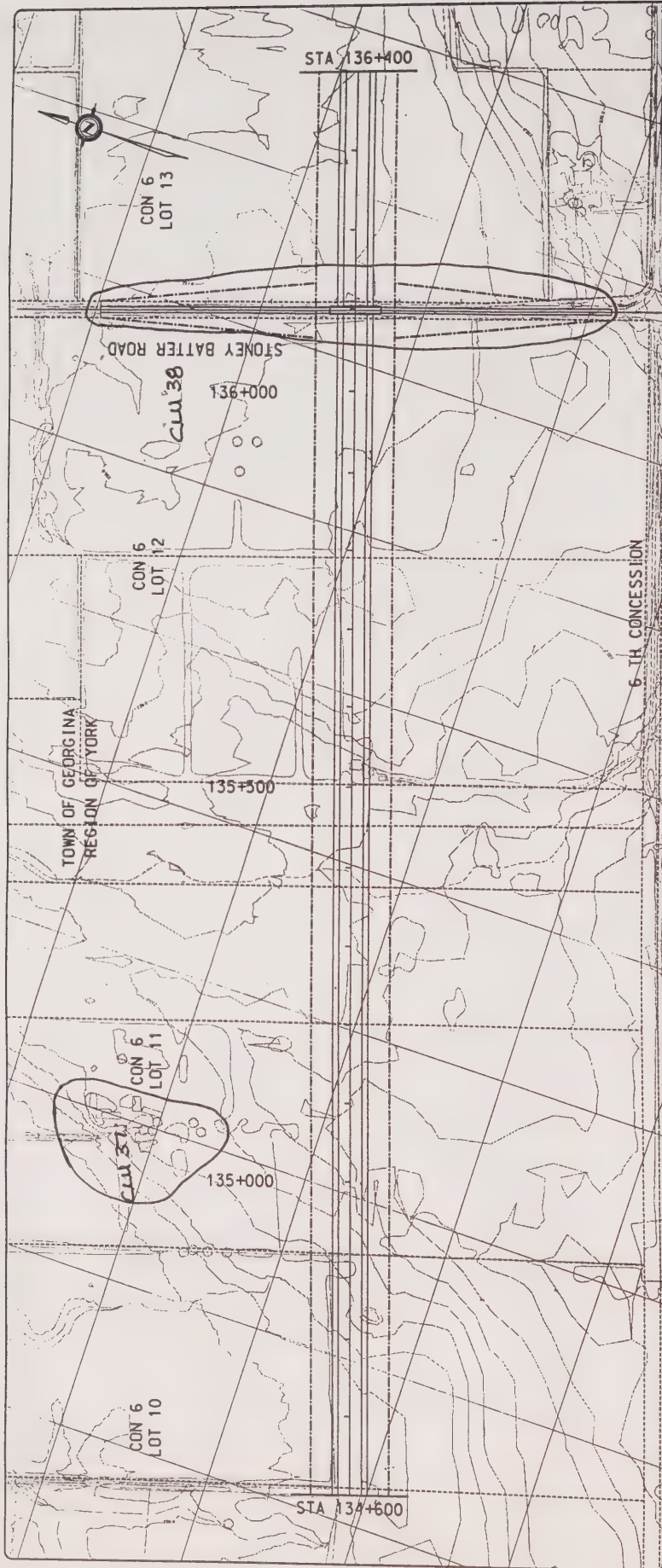
Sta 132+800 to Sta 134+600

20

SCALE

HORIZONTAL
0 50 100

VERTICAL
0 5 10



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

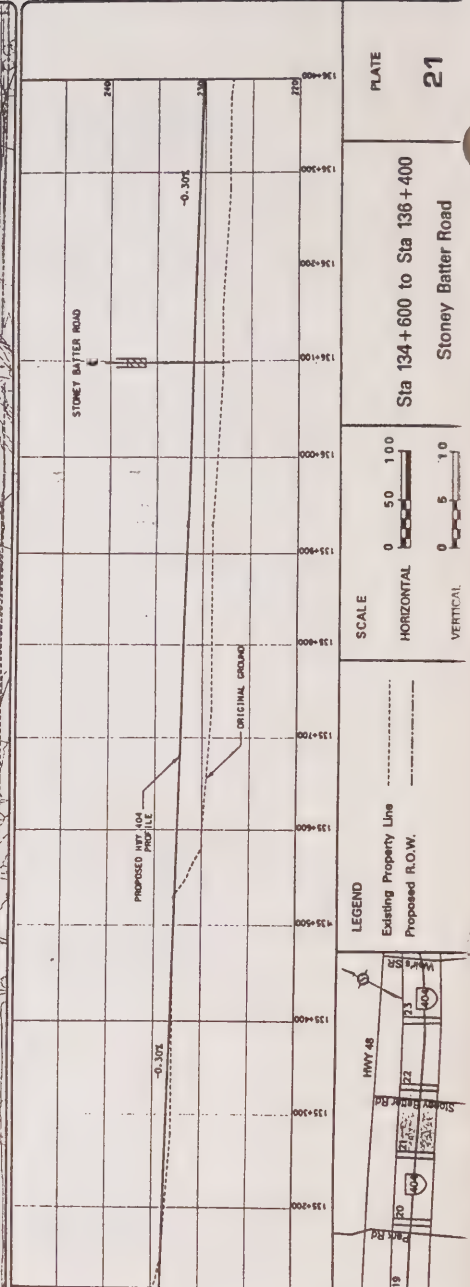
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**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



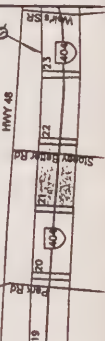
SCALE

HORIZONTAL

VERTICAL

LEGEND

Existing Property Line
Proposed R.O.W.

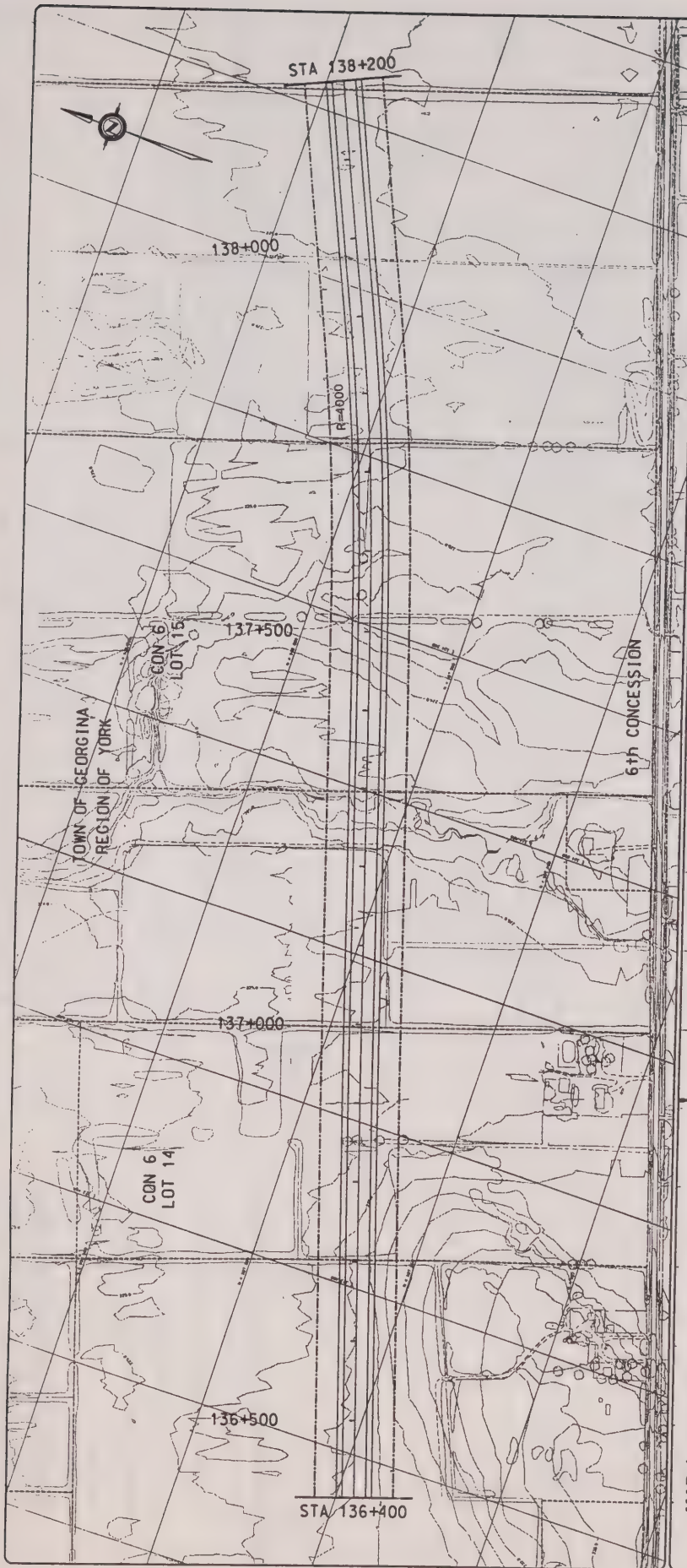


PLATE

21



Sta 134+600 to Sta 136+400

Stoney Batter Road



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

- BUILT HERITAGE FEATURES (BHF) 
- CULTURAL LANDSCAPE UNITS (CLU) 

JUNE 1997

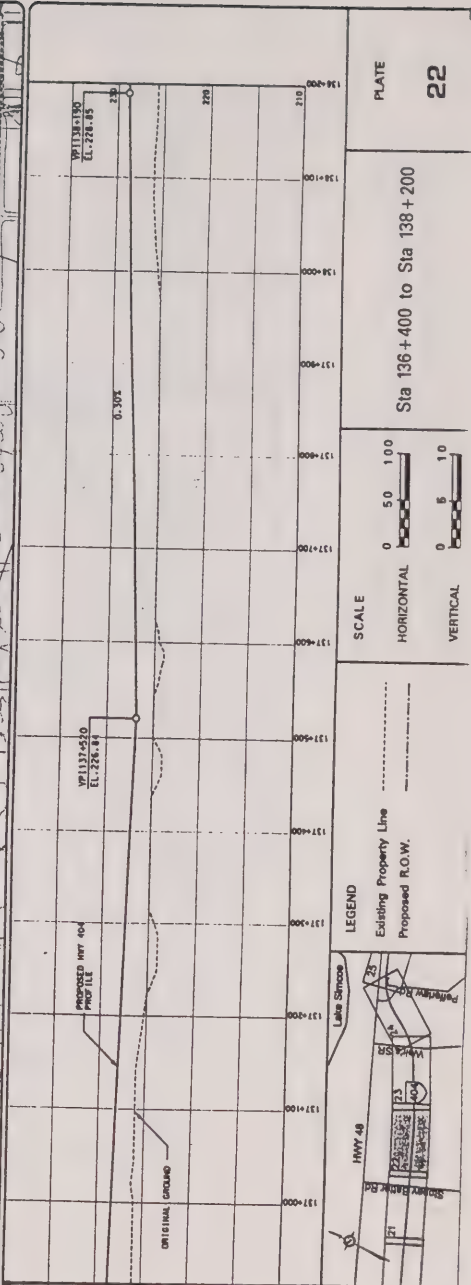
PREPARED BY:

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HIGHWAY 404 EXTENSION

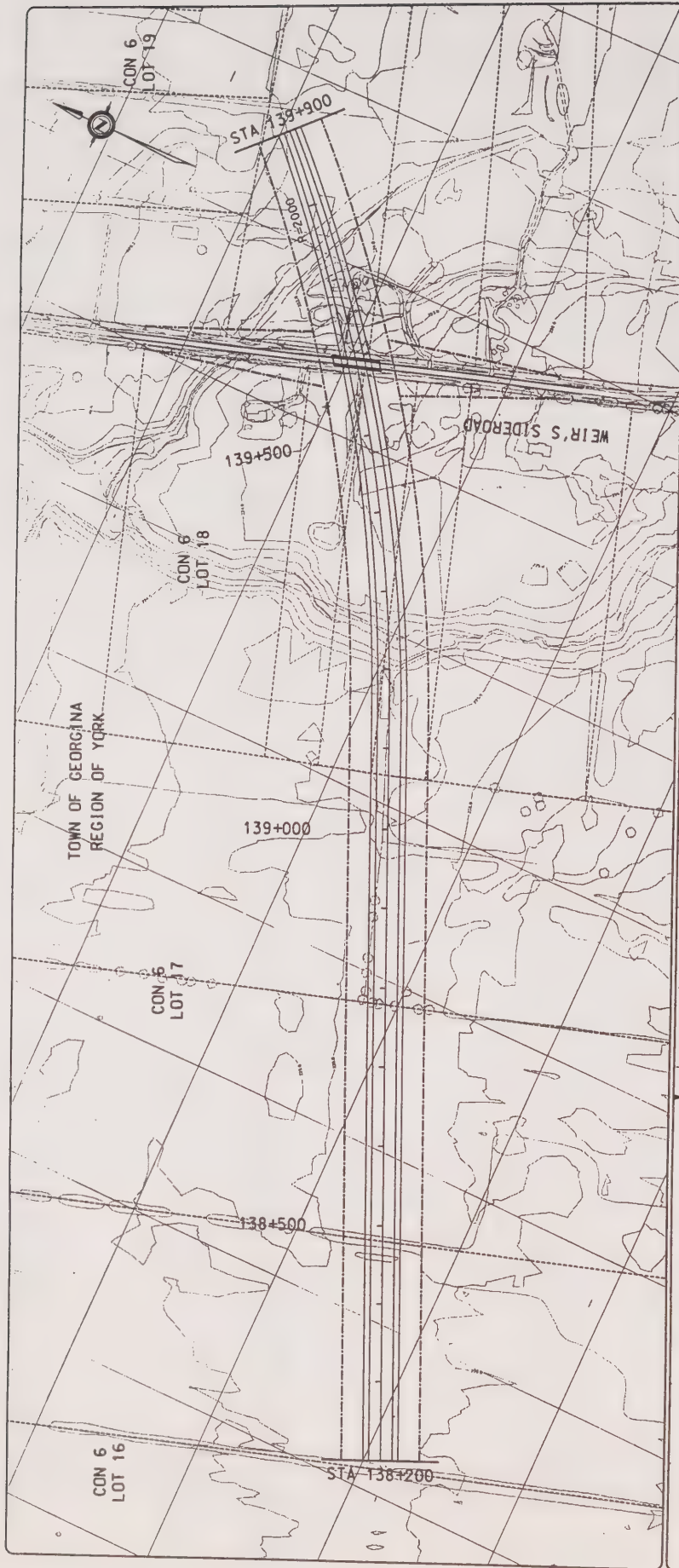
Devis Drive to Highway 12
Route Planning Study and
Environmental Assessment



Sta 136+400 to Sta 138+200

PLATE

22



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

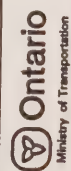
BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

PREPARED BY:

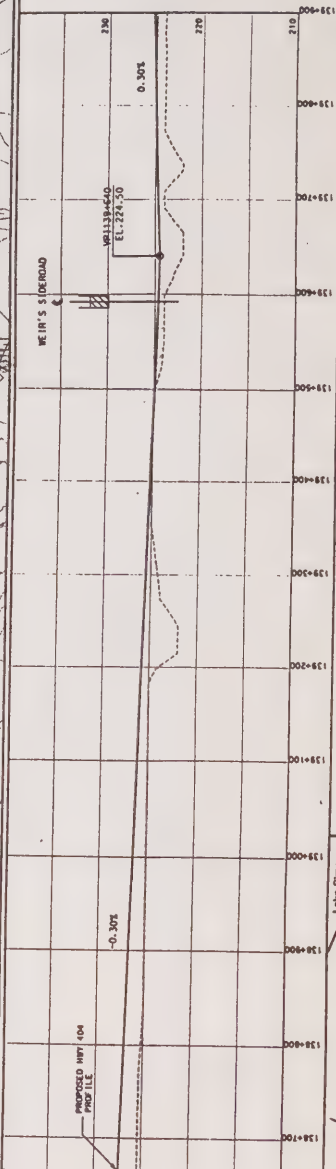
Unterman McPhail Cuming Associates
Heritage Conservation and Planning Consultants



GOLE SHERMAN

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



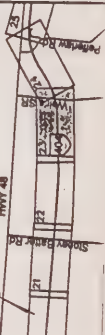
LEGEND

Existing Property Line
Proposed R.O.W.

SCALE

HORIZONTAL
0 50 100

VERTICAL
0 5 10

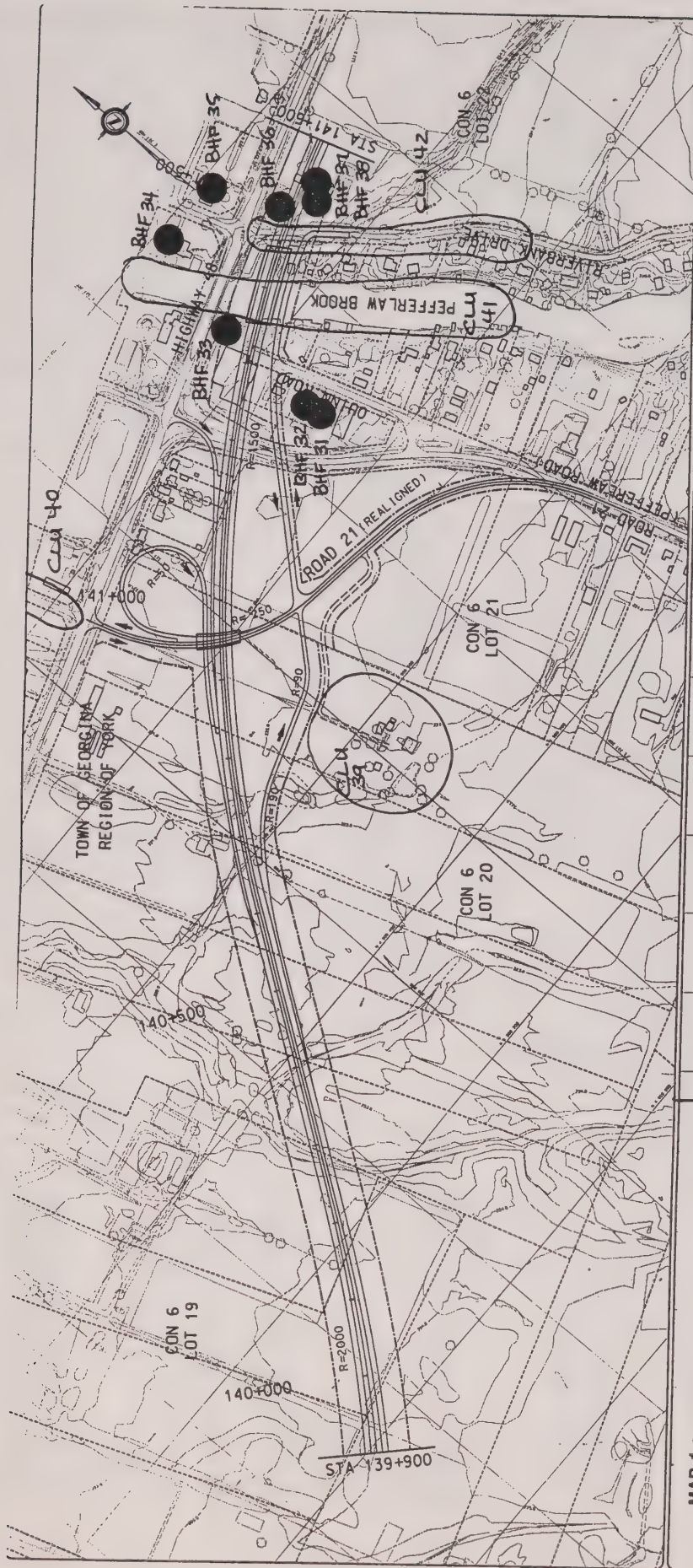


PLATE

Sta 138+200 to Sta 139+900

Weir's Sideroad

23



MAP 1 (Comprising Plates 1-32)

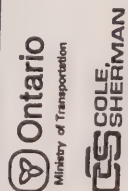
CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

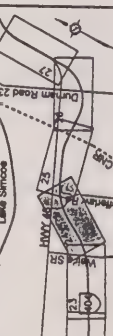
JUNE 1997
PREPARED BY:

Unterman McPhail Cuming Associates
Heritage Conservation and Planning Consultants

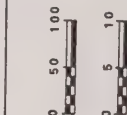


**HIGHWAY 404
EXTENSION**
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

LEGEND
Existing Property Line
Proposed R.O.W.

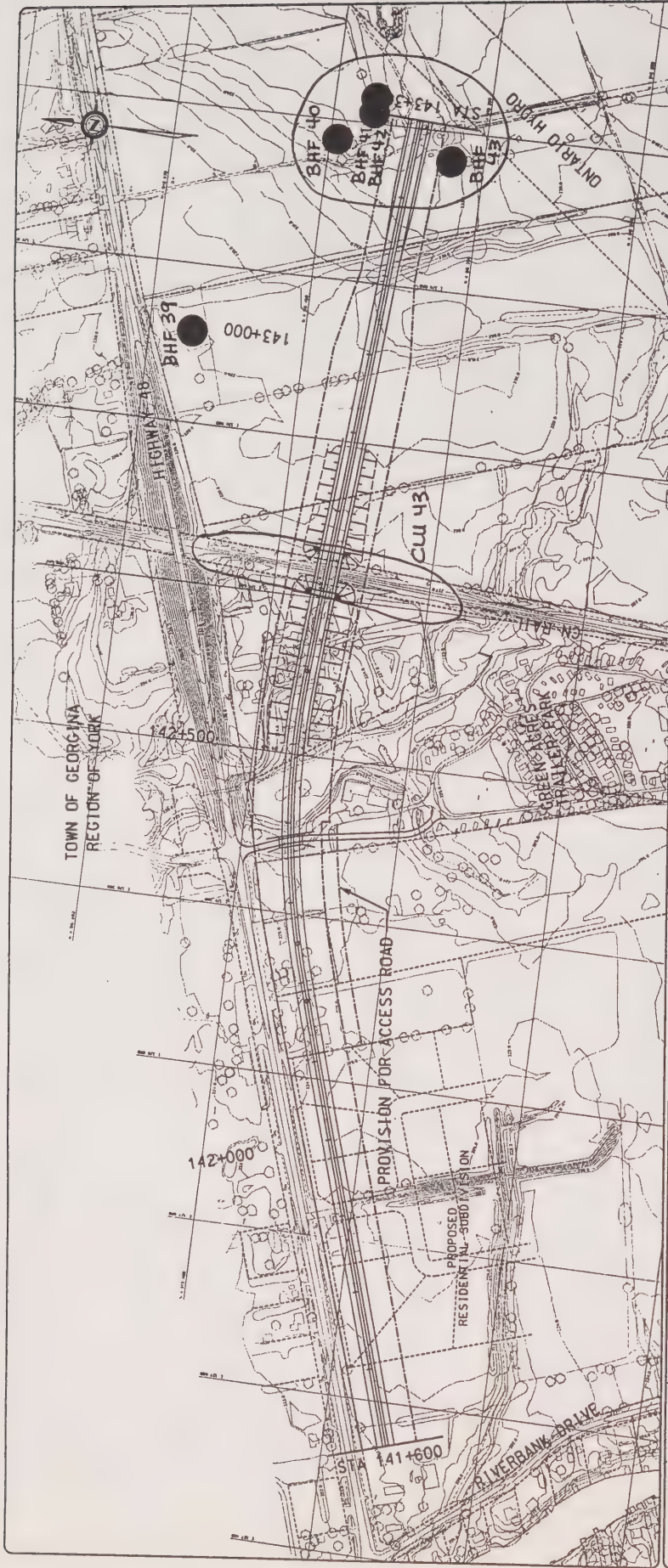


SCALE
HORIZONTAL
VERTICAL



Sta 139+900 to Sta 141+600
Pefferlaw Road Interchange

PLATE
24



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

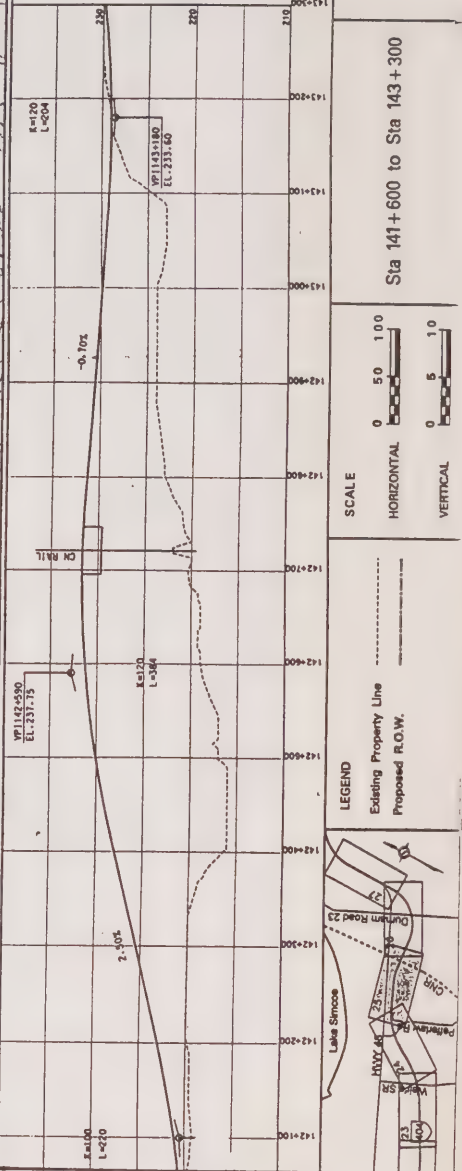
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HIGHWAY 404 EXTENSION

David Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.

SCALE

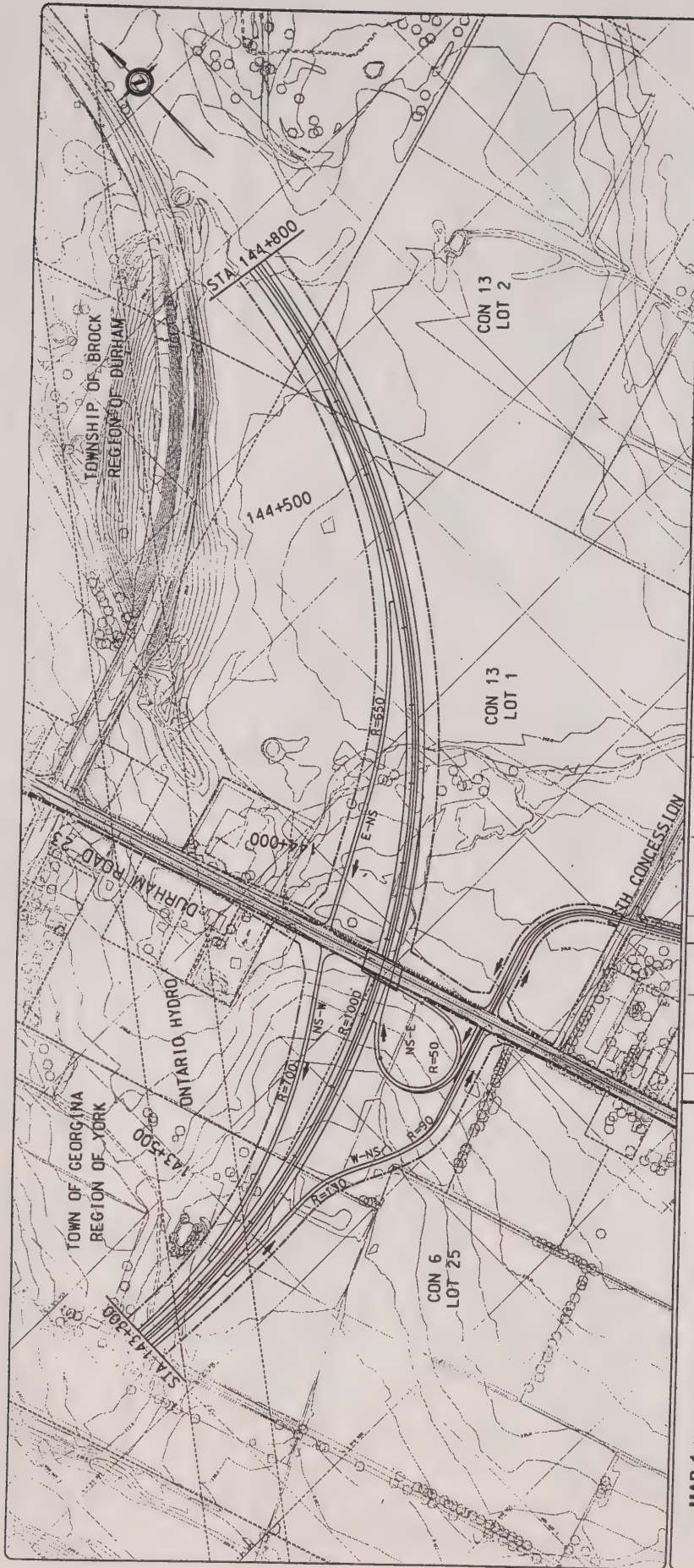
HORIZONTAL

VERTICAL

PLATE

25

Sta 141+600 to Sta 143+300



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

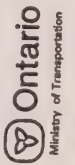
BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

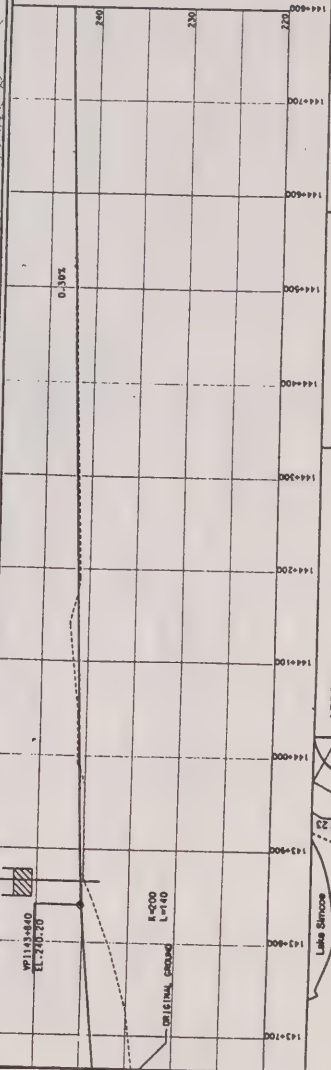
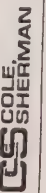
PREPARED BY:

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**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line
Proposed R.O.W.

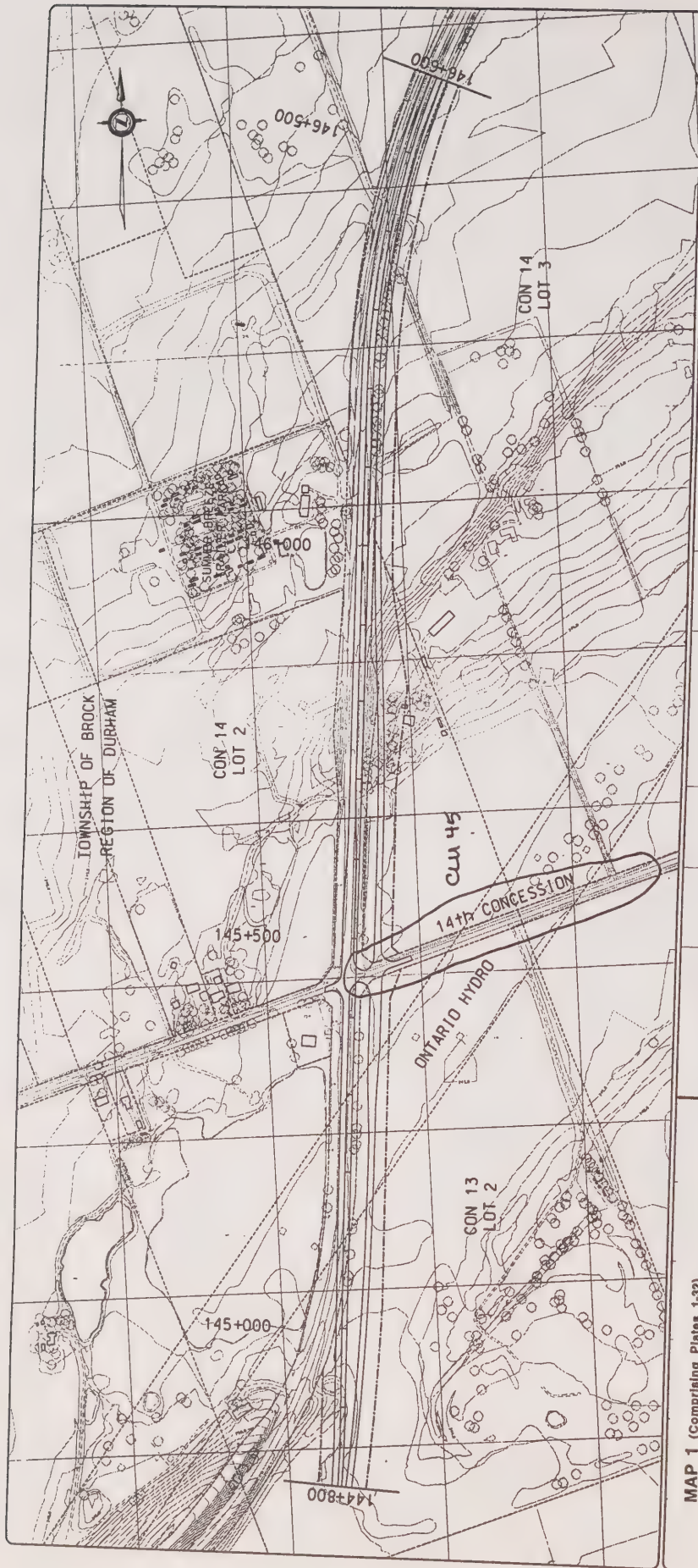
SCALE

HORIZONTAL
VERTICAL

Sta 143+300 to Sta 144+800
Durham Road 23 Interchange

PLATE

26



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

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**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



CONCESSION 14

LEGEND

Existing Property Line
Proposed R.O.W.

SCALE

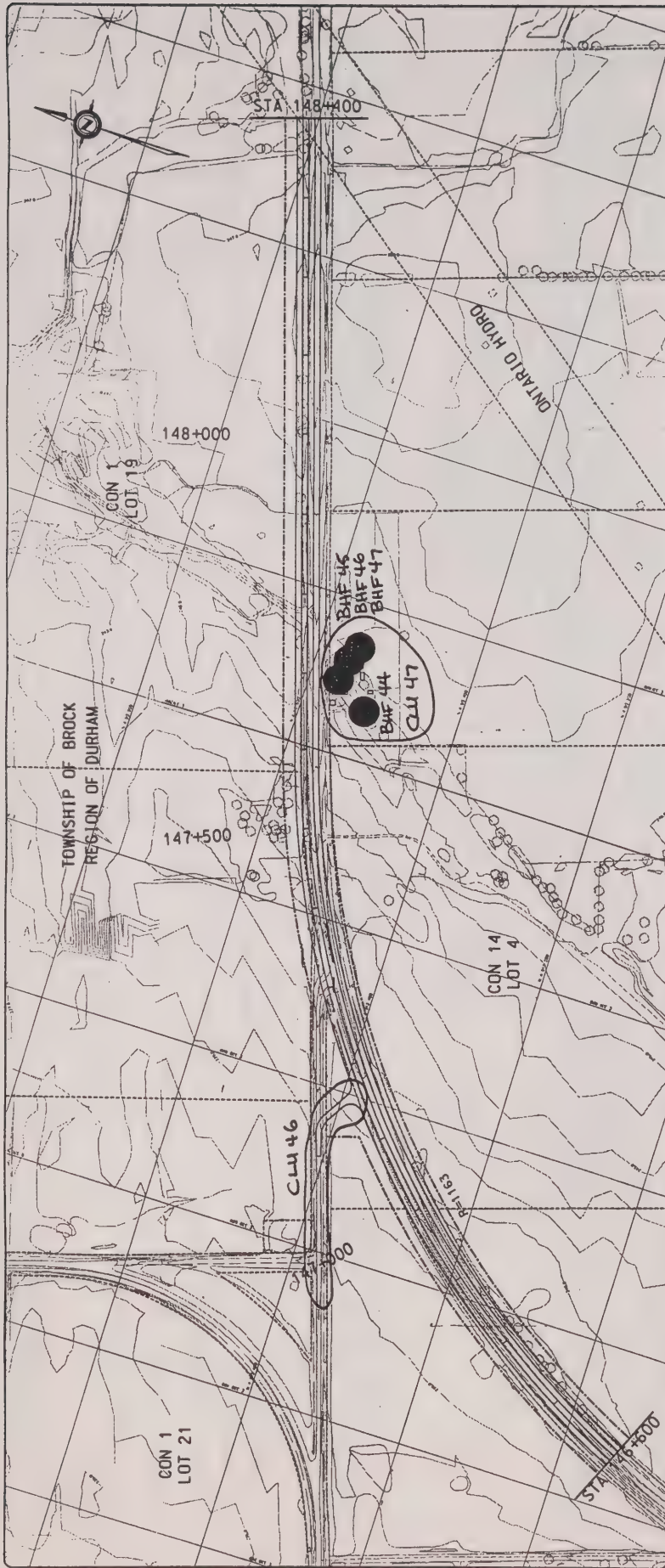
HORIZONTAL
0 50 100

VERTICAL
0 5 10

PLATE

Sta 144+800 to Sta 146+600

27



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

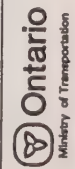
BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

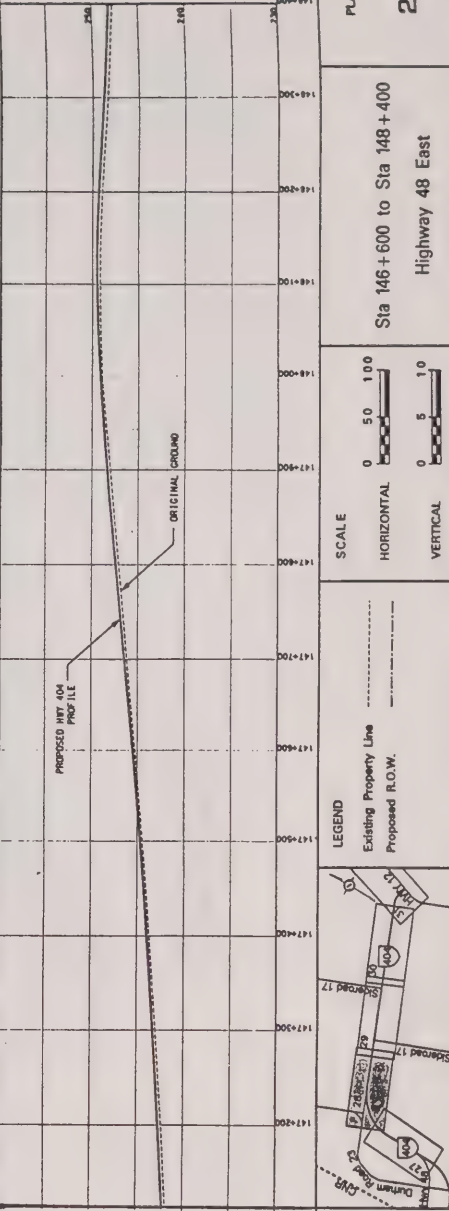
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HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND

Existing Property Line

Proposed R.O.W.



SCALE

HORIZONTAL

VERTICAL

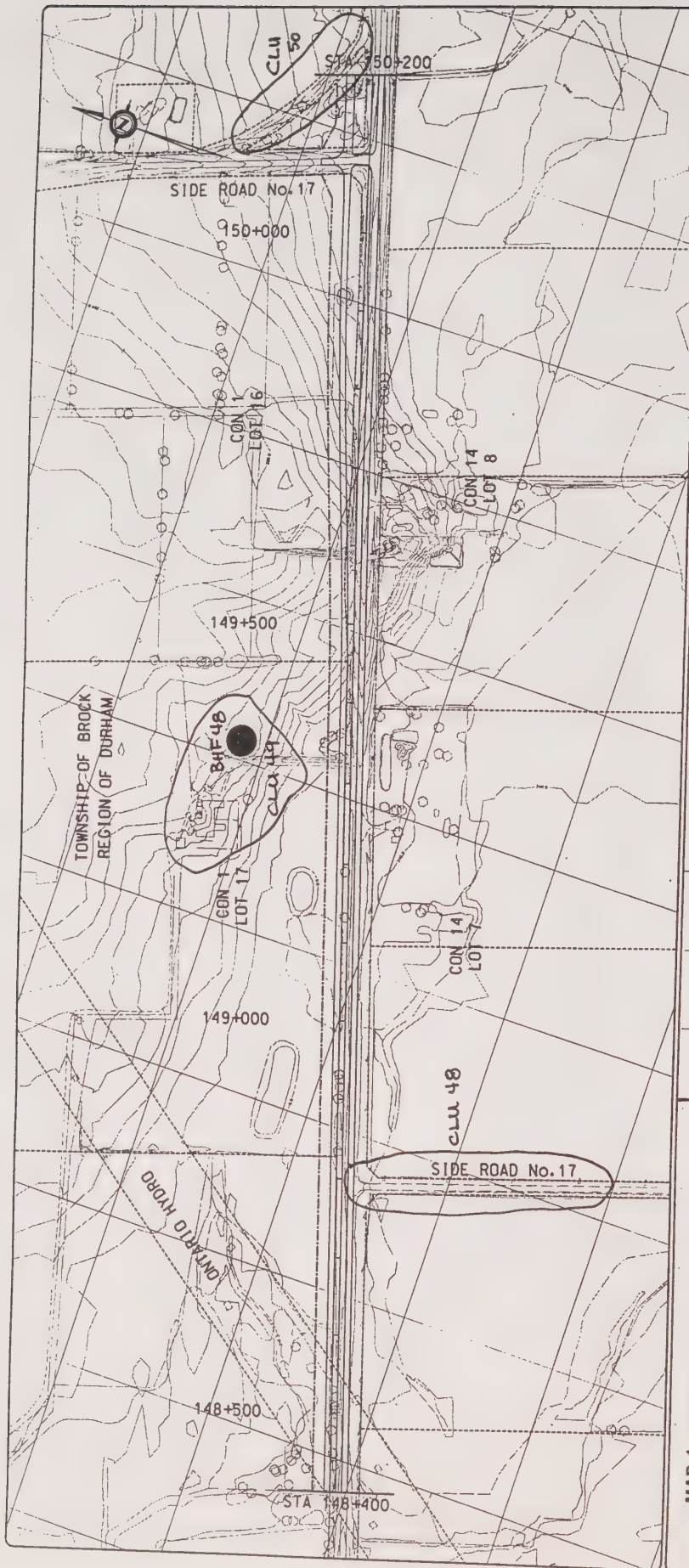
0 50 100

0 5 10

PLATE

28

Sta 146+000 to Sta 148+400
Highway 48 East



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

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COLE SHERMAN

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

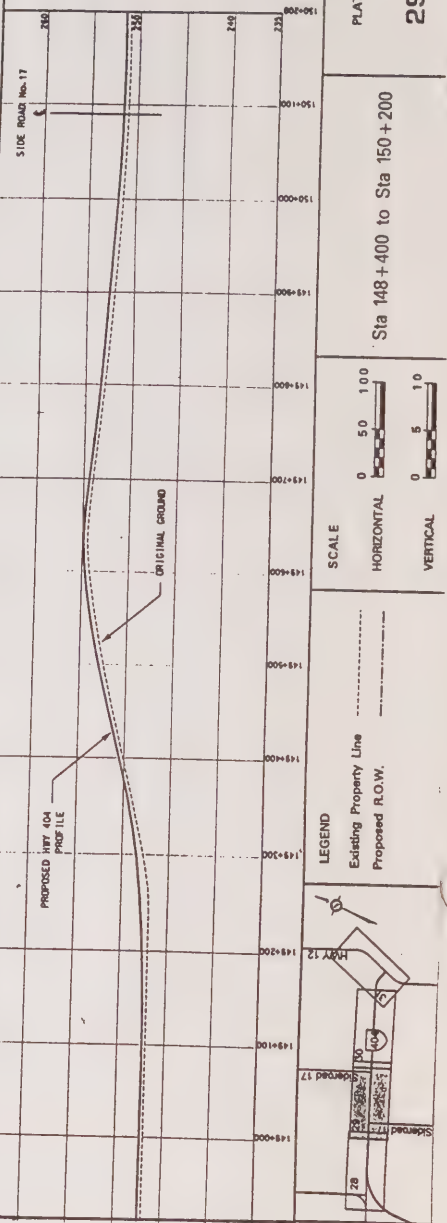
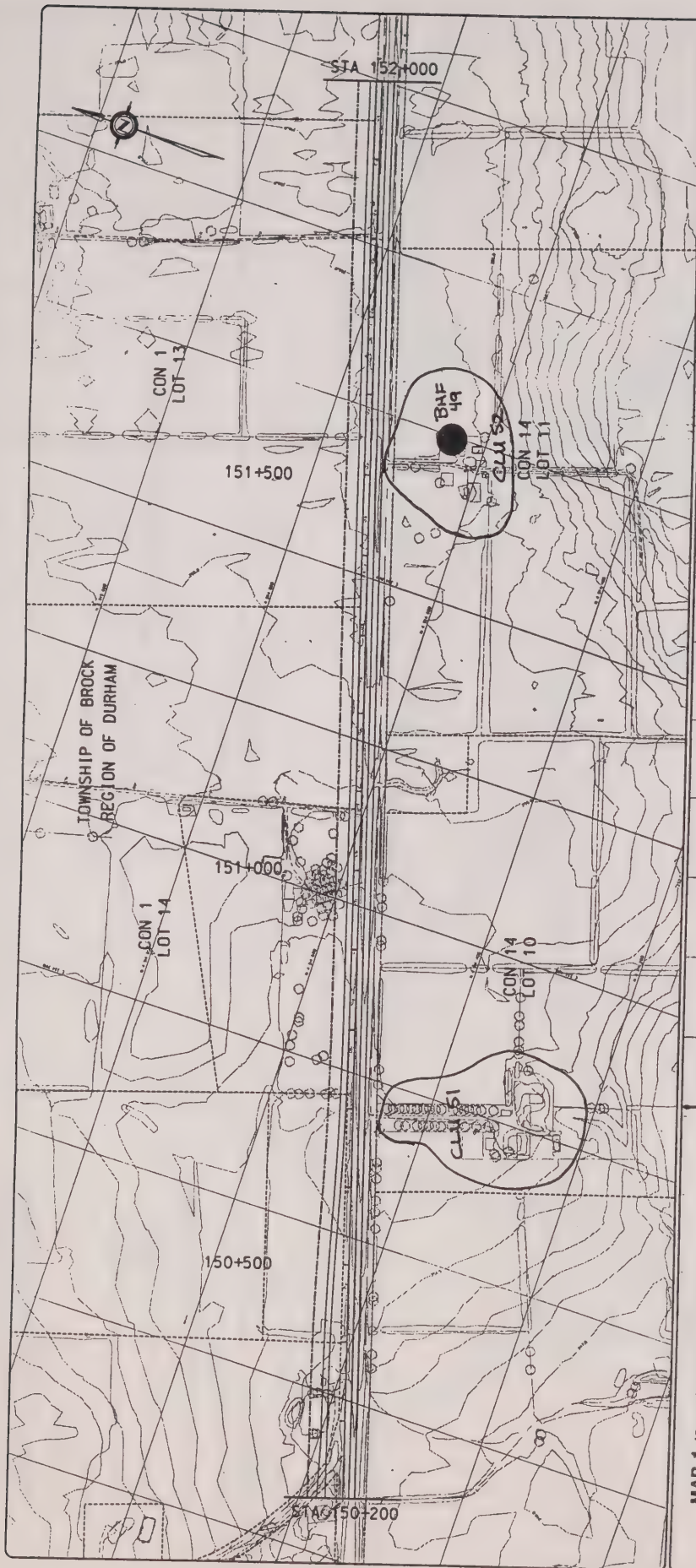


PLATE
Sta 148+400 to Sta 150+200

29



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

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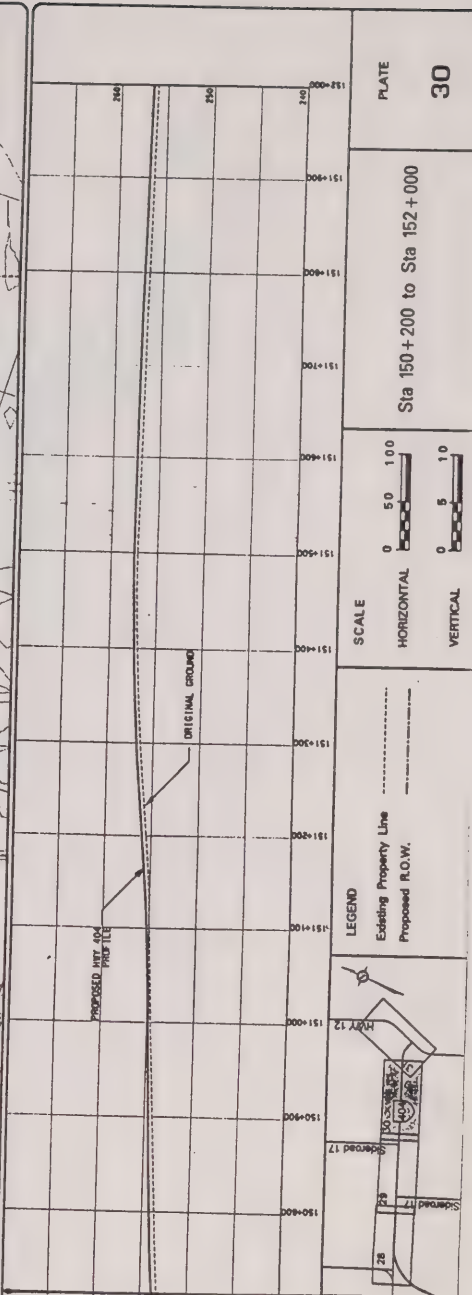


Ministry of Transportation



HIGHWAY 404 EXTENSION

Devils Drive to Highway 12
Route Planning Study and
Environmental Assessment



SCALE

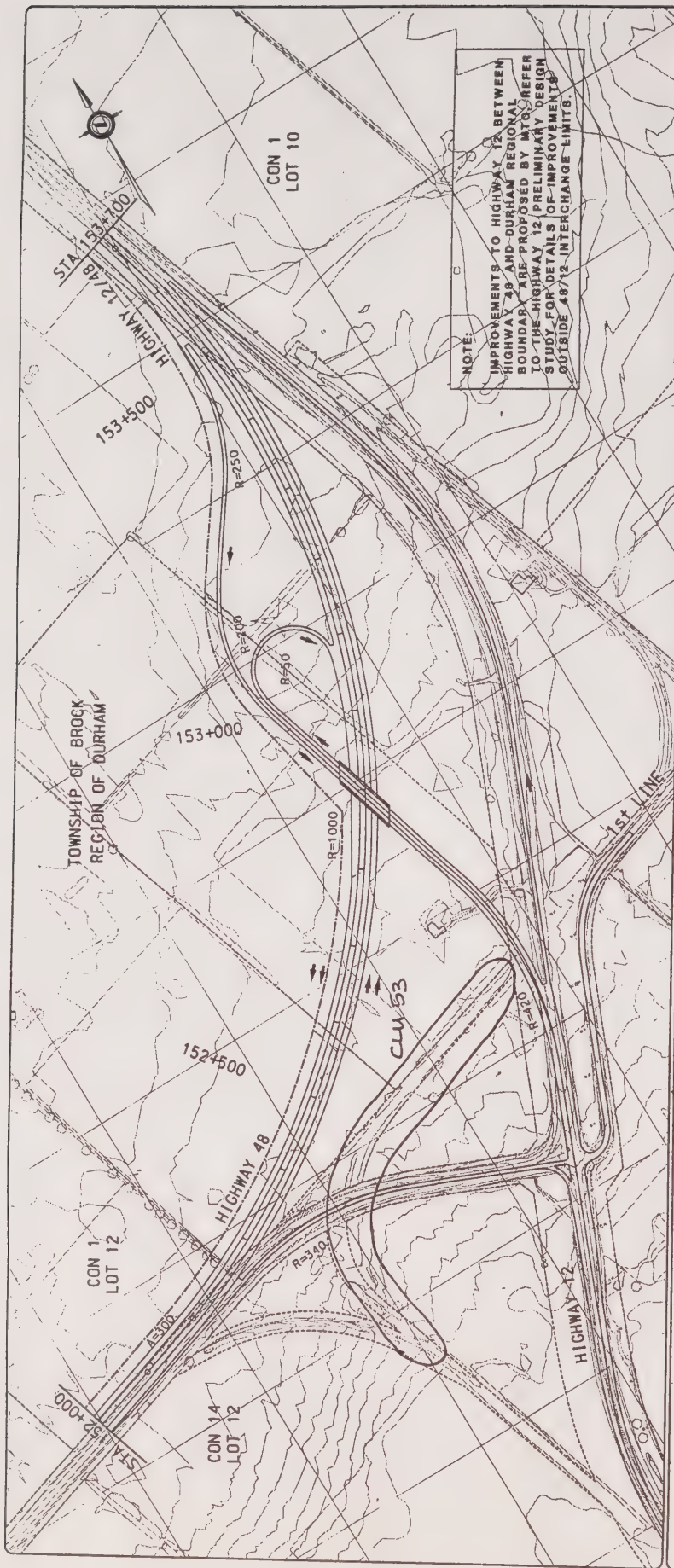
HORIZONTAL

VERTICAL

PLATE

30

Sta 150+200 to Sta 152+000



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF) ●

CULTURAL LANDSCAPE UNITS (CLU) ○

JUNE 1997

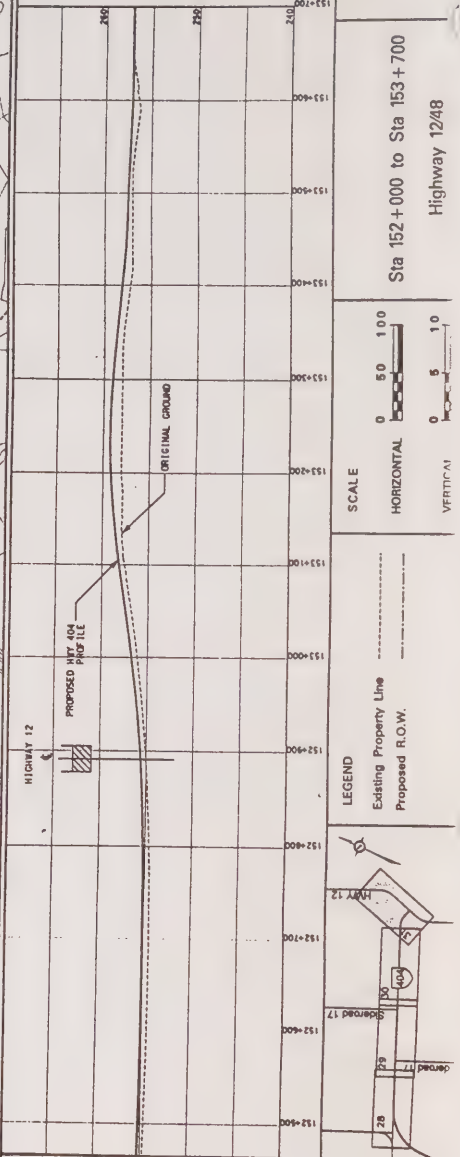
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**HIGHWAY 404
EXTENSION**

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



PLATE

Sta 152+000 to Sta 153+700

Highway 12/48

31

SCALE

HORIZONTAL

VERTICAL

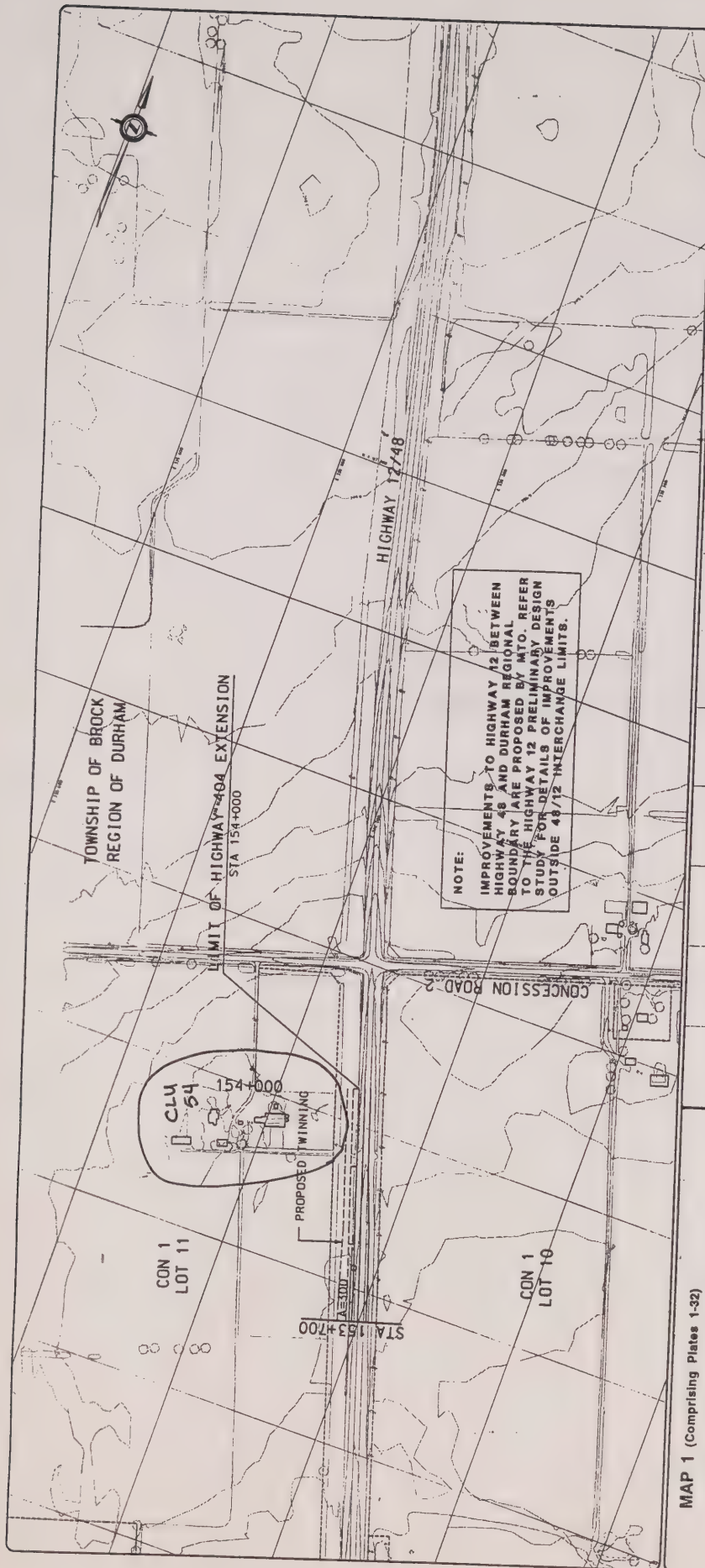
0 50 100

0 5 10

LEGEND

Existing Property Line

Proposed R.O.W.



MAP 1 (Comprising Plates 1-32)

CULTURAL HERITAGE RESOURCES

BUILT HERITAGE FEATURES (BHF)

CULTURAL LANDSCAPE UNITS (CLU)

JUNE 1997

PREPARED BY:

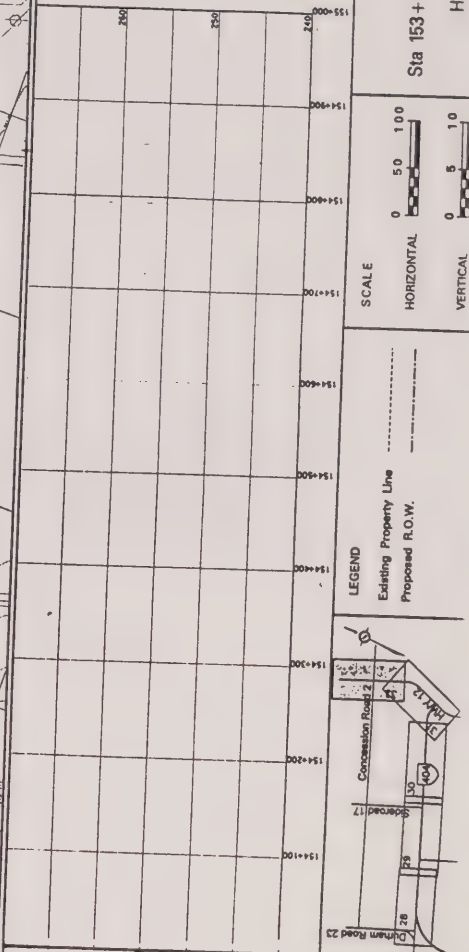
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**COLE
SHERMAN**

HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



Sta 153 + 700 to Sta 154 + 164

Highway 12/48

PLATE

32

**APPENDIX 5 SUMMARY OF PUBLIC
INFORMATION SESSIONS AND
WORKSHOPS**

SUMMARY OF PUBLIC INFORMATION CENTRE #1

1.0 INTRODUCTION

The first series of Public Information Centres was recently held regarding the Environmental Assessment Study for the Highway 404 Extension - Davis Drive to the North Junction of Highways 7/12. The Information Centres provided the public an opportunity to review and discuss the project with representatives of the Project Team.

Four Information Centres were held throughout the study area. The dates and locations were as follows:

Tuesday June 22, 1993 *
Queensville Community Centre

Wednesday June 23, 1993
Newmarket Community Centre

Monday June 28, 1993
Zephyr Community Centre

Tuesday June 29, 1993
Sunderland Memorial Arena

* Joint Information Centre with the Bradford Bypass Study

2.0 PURPOSE

The purpose of this series of Information Centres was to:

1. Introduce the Study.
2. Present the Environmental Assessment Proposal including:
 - statement of problem/opportunity;
 - proposed study process;
 - decision-making process for selecting a preferred alternative; and
 - provisions for public participation.
3. Gather Information and Identify Concerns and Issues.

4. Document the Comment Received from those in Attendance.

3.0 PUBLIC NOTIFICATION

Prior to this series of Public Information Centres, the following measures were carried out in order to make details of the Information Centres known to study area residents and interested members of the public:

1. Brochures and copies of the EAP were distributed to all municipal clerks for municipal councilor information and public review.
2. An Ontario Government Notice was placed in the following newspapers:

Toronto Star	Saturday June 5, 1993
Aurora Era Newmarket Banner	Wednesday June 9, 1993
Georgina Advocate	Wednesday June 9, 1993
Stouffville Uxbridge Tribune	Wednesday June 9, 1993

2. Approximately 14,500 brochures detailing the project were sent to area residents inviting them to attend the Information Centres.
4. Letters and brochures were directly sent to those people on the Project Team's mailing list. This mailing list included:
 - Cottage and Ratepayer Groups.
 - Chambers of Commerce.
 - Environmental Groups.
 - Heritage Groups.
 - Agricultural Groups.
 - Other interested individuals that requested to be placed on the mailing list.

4.0 PRE-PIC MEETINGS

i) Municipal Team

Prior to the Public Information Centres meeting were held with municipal staff, letters were sent to municipal clerks, and council meetings were held if requested:

The dates of Municipal Staff meetings were:

- | | |
|----------------------------|--------------|
| • Region of York | May 10, 1993 |
| • Town of Newmarket | May 13, 1993 |
| • Town of East Gwillimbury | May 14, 1993 |
| • Town of Georgina | May 20, 1993 |
| • Region of Durham | May 12, 1993 |

The dates of Council Presentations were:

- | | |
|----------------------------|---------------|
| • Town of East Gwillimbury | June 7, 1993 |
| • Township of Uxbridge | June 14, 1993 |

ii) External Team

A meeting for the External Team was held on June 14, 1993. The purpose of this meeting was to introduce the study and discuss the Environmental Assessment Proposal (see Appendix D for minutes of meeting).

5.0 MATERIAL DISPLAYED

The following display material was presented:

- Information boards Introducing the Study and the Environmental Assessment Process.
- The Statement of Problem/Opportunity.
- The Proposed Decision-Making Process.
- The Evaluation of Alternatives to the Undertaking.

- The Public Consultation Process and a listing of Interest Groups contacted to date.
- What's Next.

6.0 ATTENDANCE/COMMENTS

The following represents the number of visitors who chose to sign the sign-in sheet for this series of Public Information Centres:

• Tuesday June 22, 1993	231
• Wednesday June 23, 1993	32
• Monday June 28, 1993	108
• Tuesday June 29, 1993	124

In addition to verbal comments, Project Team members encouraged visitors to express, in writing, all concerns they had regarding the information presented. The chart below document the number of comment sheets received.

DATE	ATTENDANCE	COMMENT SHEETS RECEIVED	% OF PEOPLE WHO FILLED IN A COMMENT SHEET
June 22, 1993	231	12	5 %
June 23, 1993	32	6	19 %
June 28, 1993	108	17	16 %
June 29, 1993	120	6	5 %
Sheets mailed in	-	14	N/A
Total	491	55	11%

Among the 55 written comments received from this series of Public Information Centres, the most common expressed were:

COMMENT	#
• Concerned about community impacts	14
• Concerned about natural environment impacts	12
• Questioned the need	9
• Agreed with the need	9

The following represents a summary of all written comments received:

COMMENT	#
• Concerned about community impacts.	14
• Concerned about natural environment impact.	12
• Question the need.	9
• Agreed with the need.	9
• Wished to be added to the mailing list.	5
• "Alternatives To" should be further considered.	4
• Highway should be located as far north as possible.	4
• Speed up project construction.	4
• Process takes too long.	5
• Concerned about freeze on development in study area.	3
• Questioned study area - why connect to Highway 7?	3
• Questioned Study area - why not include Highway 48?	3
• Concerned about impacts to farming.	3
• Concerned about property impacts.	3
• Agreed with process.	2
• Specific requests for further information.	2
• Commented on the role of PIC staff.	2
• Impacts in general should be minimized.	1
• Concerned about highway safety of new route.	1
• Concerned about impact to personal property.	1
• Concerned about increased truck traffic associated with proposed landfill.	1
• Improve local roads.	1
• Disagreed with the process.	1
• Should consider school buses.	1
• Too much influence from special interest groups.	1
• Improve drivers, not roads.	1

The questionnaire component of the comment sheet was completed by 25 people. The result of this survey is outlined on the following chart:

QUESTION	YES	NO	IF NO, COMMENTS
1. Does the "Problem / Opportunity Statement" for this study reflect the transportation issues that should be addressed?	21 62%	13 38%	<ul style="list-style-type: none"> • Are current routes ineffective, or inconvenient? • Statement pre-supposes a problem exists. • Other methods of transportation should be addressed. • Statement pre-supposes a problem. No proof a problem exists. • School buses not be considered. • Problem can be addressed with combination of other "Alternatives To". • Does not feel east-west traffic justifies the need for a highway. • Agrees there is a problem in the Newmarket area, but does not observe a problem through the rest of study area. • This Plan is to be completed in 25 years; traffic is bad now. • Utilize existing road grids and merely upgrade. • Existing network can handle east-west traffic. • Does not feel need has been proven.

QUESTION	YES	NO	IF NO, COMMENTS
2. Do you agree with the Study Area chosen for this study?	21 62%	13 38%	<ul style="list-style-type: none"> • Study Area should extend further north (of Ravenshoe Road to enable a connection to Keswick). • Start work now. • Consider Highway 48 and why does Highway 404 have to connect with Highway 7? • This will impact communities because of access and because of sheer numbers; would be disastrous to ecology and small communities. • If the objective is to move people and goods north around the east of Lake Simcoe, the study should formally consider the existing Highway 48 option which runs to the north of the Study Area. The Highway 7 connection does not appear relevant. • How can you possibly justify taking away people's homes and livelihoods for a road? • Highway should utilize existing roads. • Does not agree with need and therefore, does not agree with the Study Area. • Study Area should only consider northerly extension of Highway 404, not east-west section. • I think you should follow the concessions as much as possible. • Study Area (for Bradford Bypass) should be further south where the population is. • No need for east-west Study Area.

QUESTION	YES	NO	IF NO, COMMENTS
3. Do you support the decision-making process this study will follow?	18 60%	12 40%	<ul style="list-style-type: none"> • The people affected are not involved very much and when we are involve, our views fall upon deaf ears - like this questionnaire. • Would seem this decision-making process is not clear. Evaluation and screening of alternatives is, but where does it say ultimately government bodies make the decision? I agree with the openness to 'local' input & processes for gathering it, but unless 'locals' can affect the decision, I don't agree with it. • Decisions are impractical considering long-term goals and (vs) ecology (pollution from automobiles). • Decisions should be made before Bradford east-west consideration. • Start work now. • Shorten it - and don't involve the Minister. • I feel it takes too long for a decision to be made and leaves homeowners in limbo. • Scrap the entire study now. The Highway will be out-of-date in 5 years. • Feels route is already decided by Highway 89 Study. • Process takes too long. • More rural area impact. • I feel the decision has already been made and we are not truly at the first step as indicated, but are asked for our input only to put us at ease for the moment.

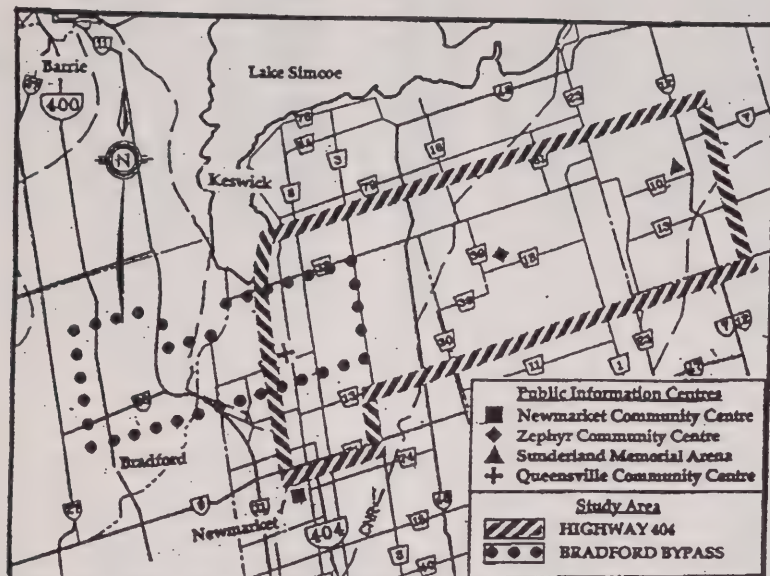
QUESTION	YES	NO	IF NO, COMMENTS
4. Do you agree with the "Alternatives To" the undertaking carried forward for further examination?	16 57%	12 43%	<ul style="list-style-type: none"> • 20 years too late. • There are other alternatives that should be considered. • Based on your presentation, highways/roads seems to be the only solution, i.e.. not air, water etc. But I do not necessarily agree that road expansion is a solution when there are 'local' cost to community and environment. • We do not need more roads. We need driver discipline, policing and training. • Scrap the entire study. • Is the road for a future GTA dumpsite or MTO Quarry north of Highway 7/12? Other alternatives such as rail and rapid transit should be considered in greater detail. • Rail should be given greater consideration. • Utilize/improve existing situation. • Combination of "Alternatives To" need to be considered further.
5. Do you agree with proposed evaluation criteria?	24 86%	4 14%	<ul style="list-style-type: none"> • Shorten it. • There is too much influence from special interest groups. • Even 5 years from now study is a waste of taxpayers' money. • Agrees, but suggests addition of measures for indirect property impacts and more indicators for social impacts are required.

QUESTION	YES	NO	IF NO, COMMENTS
6. Do you support the public consultation program proposed for this study?	26 87%	4 13%	<ul style="list-style-type: none"> • The people who run these "information" sessions shouldn't be public relations people. It should be the people making the actual decisions. • Start work on the road. • I do not believe that your presentation to the public is accurate or true. I believe the route is already decided and planned. • Does public participation really provide the opportunity to speak or decide on the issues? As in Page 2 of your initial draft EAP, you write "interested parties risk losing the opportunity to comment on EAP issues if they are not brought forward at this time". How many people took the comment as a threat? • Agrees with process, but comments by work of mouth are not taken down and reviewed. EAP should be more freely available and more time to comment is required. • Agrees with process, but feels EAP should be more freely available and more time to review it is required.

ONTARIO GOVERNMENT NOTICE

NOTICE OF STUDY COMMENCEMENT AND INFORMATION CENTRES FOR REVIEW OF THE ENVIRONMENTAL ASSESSMENT PROPOSAL
The Ministry of Transportation (MTO) has initiated a study to examine transportation improvements between the terminus of Highway 404 at Davis Drive and the north junction of Highway 7 and Highway 12.

The study area includes portions of York Region (Newmarket, East Gwillimbury, Georgina) and Durham Region (Uxbridge, Brock) as illustrated on the map below. The area to the west of York Regional Road 12 (Leslie Street) is also under study as part of the concurrent and related Bradford Bypass study.



This study will address the transportation problems caused by the disjointed and discontinuous road network in the area and will identify the long-term provincial transportation needs so that any associated property requirements may be defined and protected.

The study will include a comprehensive public participation program. The planning process for the study, the proposed technical activities, and the public participation program, are outlined in an Environmental Assessment Proposal (EAP) which will be available for review at the first series of Information Centres (and at the offices of the affected municipalities). The Information Centres will allow the public and interest groups an opportunity to discuss their study concerns with members of the Project Team. All subsequent phases of the study will be based upon the information in the EAP, and your input at this time is very important.

The first in a series of four information Centres have been arranged for:

TUESDAY, JUNE 22, 1993
3:00 p.m. to 9:00 p.m.
QUEENSVILLE COMMUNITY CENTRE
1590 Queensville Sideroad
Queensville, Ontario

WEDNESDAY, JUNE 23, 1993
3:00 p.m. to 9:00 p.m.
NEWMARKET COMMUNITY CENTRE
221 Cedar Street
Newmarket, Ontario

MONDAY, JUNE 28, 1993
3:00 p.m. to 9:00 p.m.
ZEPHYR COMMUNITY CENTRE
Durham Regional Road #13
Zephyr, Ontario

TUESDAY, JUNE 29, 1993
3:00 p.m. to 9:00 p.m.
SUNDERLAND MEMORIAL ARENA
20 Park Street, 2nd Floor
Sunderland, Ontario

This study is subject to the full review and approval requirements of the environmental Assessment Act. At the completion of the study, an Environmental Assessment Report will be submitted to the Ministry of the environment and Energy for approval. If after consulting with MTO, serious environmental concerns remain unresolved, a request may be made for a hearing.

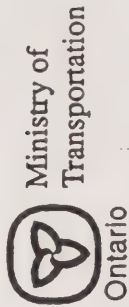
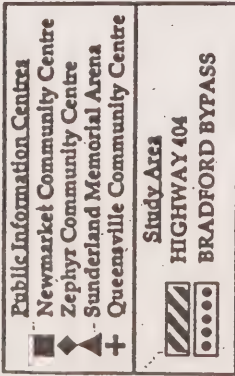
Comments and information regarding this study are being collected to assist MTO in meeting the requirements of the Environmental Assessment Act. You are encouraged to contact project staff at any time if you have questions or concerns about this project. Information and comments obtained will be kept on file for use during the study and unless otherwise requested, may be included in documentation which is made available for public review (names and addresses will be kept confidential). If you would like your name added to our mailing list please forward it, or your comments and concerns to:

Mr. Steve Jacobs, P.Eng.
Senior Project Engineer
Planning and Design Section
Ministry of Transportation
4th Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

Mr. Chris Rickerts, P.Eng.
Consultant Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Tel: (416) 235-5522
Fax: (416) 235-4382

Tel: (416) 882-4401
Fax: (416) 882-4399



HIGHWAY 404 EXTENSION

Davis Drive to Highways 7/12

ENVIRONMENTAL ASSESSMENT STUDY

BROCHURE #1

FIRST SERIES OF PUBLIC INFORMATION CENTRES

Tuesday, June 22, 1993
and
Wednesday, June 23, 1993
and
Monday, June 28, 1993
and
Tuesday, June 29, 1993



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7. STUDY SCHEDULE

PHASES	1993	1994	1995
1. BACKGROUND & APPROACH	M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S
2. ROUTE PLANNING			
3. PRELIMINARY DESIGN			
4. REPORT			
MEETINGS PLC.			

Draft
Submission

Final Submission
and Review

1. THE STUDY

The Highway 404 Extension Environmental Assessment Study has been initiated by the Ministry of Transportation (MTO) to examine improvements to transportation between the terminus of Highway 404 at Davis Drive and the north junction of Highway 7 and Highway 12. The limits of the Study Area for the project are shown on the map on the reverse side of this brochure.

NOTE: A separate study is being undertaken for the Bradford Bypass from Highway 400 to the Highway 404 extension.

2. BACKGROUND

In order to resolve the transportation deficiencies south of Lake Simcoe (as examined in previous studies), the Ministry announced, in April 1986, its intent to make improvements to the east-west corridor in conjunction with planning for an extension of Highway 404. Discussions commenced with the affected municipalities to evolve a strategy for continued study.

To establish the need and justification for the new Highway 404 and Highway 89 corridors, a "Network Overview" study was carried out in 1989. The report recommended an extension of Highway 404 easterly around Lake Simcoe as far north as Gravenhurst as an ultimate component of the provincial highway network. With respect to immediate corridor protection, it was recommended that a new environmental assessment study (with a route planning component) be initiated for the extension of Highway 404 northerly and easterly to meet Highways 7/12.

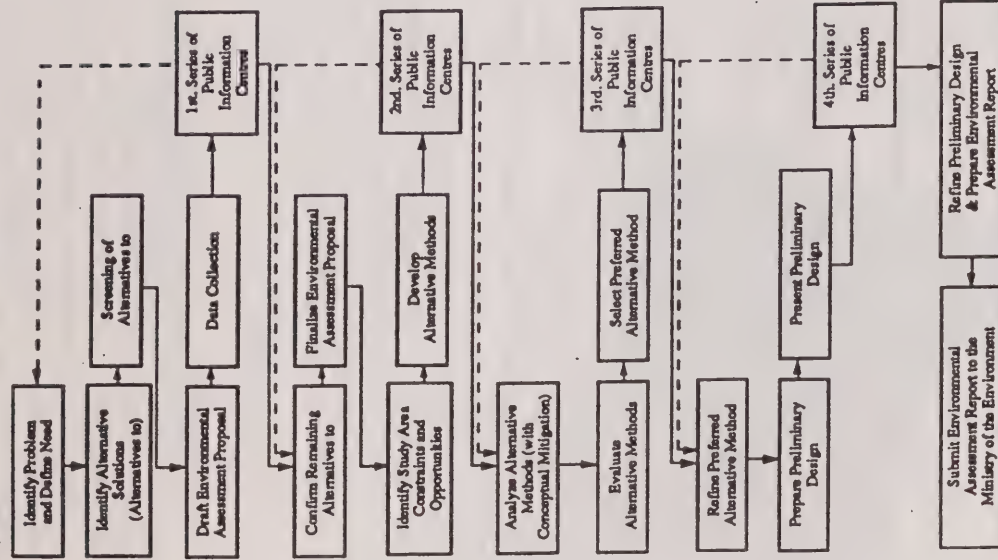
3. STUDY ORGANIZATION

The Highway 404 Extension Route Planning Study and Environmental Assessment is an undertaking of the Ministry of Transportation. A Project Team comprised of Ministry of Transportation representatives assisted by consultants has been formed to carry out the study and to ensure interaction with municipal staff, government agencies, special interest groups, elected officials and members of the public.

4. STUDY PROCESS

This project is subject to the Environmental Assessment Act and will result in the submission of an Environmental Assessment report to the Ministry of the Environment and Energy for acceptance and approval (with or without a hearing).

The following diagram illustrates the study process for this project:



5. PUBLIC INFORMATION CENTRES

Public consultation is an essential part of the planning process and members of the public are encouraged to attend the Public Information Centres. The times and locations of the Public Information Centres within your area will also be advertised in local newspapers.

The first series of Public Information Centres will allow you the opportunity to review and comment on the draft Environmental Assessment Proposal (EAP). The EAP is intended to enhance the study process by facilitating early public and agency consultation and by focusing project planning.

Major components of the EAP include:

- Need and Justification;
- Study Area;
- Transportation Alternatives to be Considered;
- Screening and Evaluation Process; and,
- Public Consultation Program.

The first in a series of Public Information Centres has been arranged. They will be staffed by Project Team representatives who will be able to discuss the project with you. You are encouraged to attend one of the centres listed below to express your views.

TUESDAY, JUNE 22, 1993*

3:00 p.m. to 9:00 p.m.

QUEENSVILLE COMMUNITY CENTRE

1590 Queensville Sideroad (East of Leslie Street)

WEDNESDAY, JUNE 23, 1993

3:00 p.m. to 9:00 p.m.

NEWMARKET COMMUNITY CENTRE

221 Cedar Street

MONDAY, JUNE 28, 1993

3:00 p.m. to 9:00 p.m.

ZEPHYR COMMUNITY CENTRE

Durham Regional Road # 13

TUESDAY, JUNE 29, 1993

3:00 p.m. to 9:00 p.m.

SUNDERLAND MEMORIAL ARENA

20 Park Street, 2nd Floor

Information and comments obtained during this study will be maintained as a public data base and will be kept on file (names and addresses will be kept confidential).

For further information, please contact:

Mr. Steve Jacobs, P.Eng.

Senior Project Manager

Planning & Design Section

Ministry of Transportation

1201 Wilson Avenue

4th Floor, Atrium Tower

Downsview, Ontario

M3M 1J8

Tel: (416) 235-5222

Fax: (416) 235-4382

Mr. Chris Ricketts, P.Eng.

Consultant Project Manager

Cole, Sherman &

Associates Ltd.

75 Commerce Valley

Drive East

Thornhill, Ontario

L3T 7N9

Tel: (416) 882-4401

Fax: (416) 882-4399

* Joint Public Information Centre with the Bradford Bypass Study. An additional Public Information Centre for the Bradford Bypass Study is scheduled for June 17, 1993.

HIGHWAY 404 EXTENSION Davis Drive to Highway 12 AND BRADFORD BYPASS

ENVIRONMENTAL ASSESSMENT STUDIES

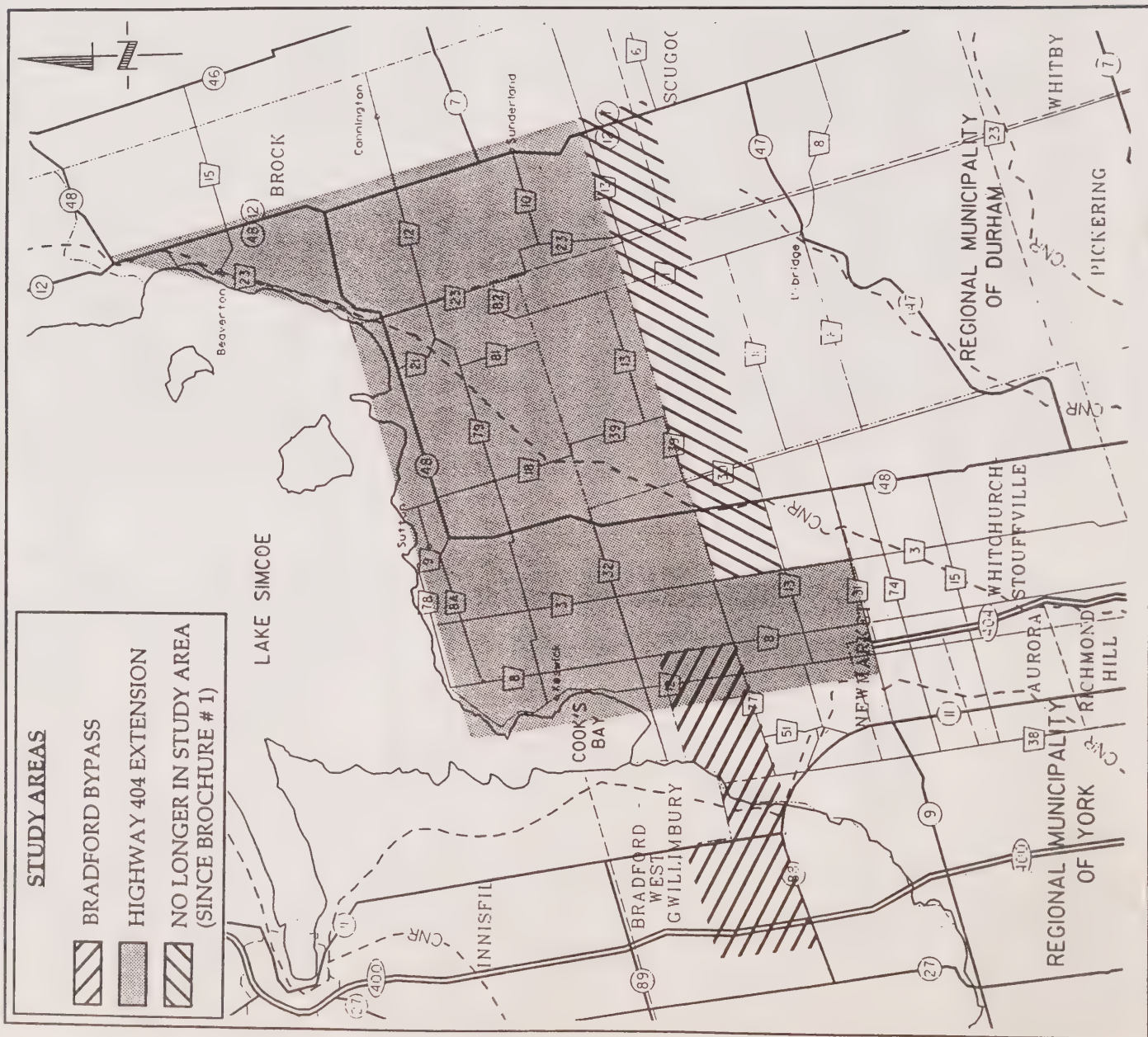
BROCHURE #2

PROJECT UPDATE

April 1994



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THE STUDIES

In Spring 1993, the Ministry of Transportation (MTO) initiated Environmental Assessment Studies to identify:

- 1) a route for the extension of Highway 404 north of Davis Drive (Highway 404 Extension EA), and
- 2) a connection between Highway 400 and Highway 404 (Bradford Bypass EA).

BACKGROUND

Public Information Centres were held in June 1993, to introduce the studies and present the draft Environmental Assessment Proposals (EAP). The EAP provided information on project scopes and preliminary findings on the process to be followed.

Concerns were expressed that the location of the study areas initially proposed may not be appropriate for determining suitable solutions to the defined problems. As a result, Corridor Assessment Studies were initiated to verify the limits of the proposed study areas.

CORRIDOR ASSESSMENT STUDIES

1) Highway 404 Extension EA

The Corridor Assessment Study for this project incorporated the latest population and employment projections and development patterns for York and Durham Regions.

Projections show that commuter volumes from northern York Region and northern Durham Region to south/central York Region and Metropolitan Toronto will significantly increase through the next 15-20 years as a direct result of proposed development. Therefore, a freeway-type facility extending Highway 404 to the east side of Lake Simcoe is required.

Traffic modelling indicates high travel demand from areas on the east side of Cook's Bay and south shore of Lake Simcoe. A new facility closer to Lake Simcoe will better serve the area.

Therefore, it was concluded that the study area should be revised and extended north, and now includes the area bounded by Cook's Bay, York Regional Road 77 (Queensville Sideroad), Highway 12 and the south shore of Lake Simcoe. The area between York Regional Road 77 (Queensville Sideroad) and York Regional Road 13 (Mount Albert Road) has been removed from the study area (see Map).

2) Bradford Bypass EA

A similar study was undertaken for the Bradford Bypass Environmental Assessment Study. The Corridor Assessment Study confirmed that the study area for locating a connecting roadway between Highway 400 and an extended Highway 404 was suitably located (see Map).

CURRENT ACTIVITIES

The Project Team is currently finalizing the data collection stage and is beginning to generate route alternatives.

Route alternatives and corresponding interchange locations are being developed to maximize the user benefits, recognize municipal development and minimize impacts to the environment.

HOW YOU CAN GET INVOLVED

A series of Public Information Centres is proposed for late June 1994, to allow you to review and comment on the data collected to date, the preliminary route alternatives and the proposed evaluation methods.

You will be informed of where and when Information Centres will be held in your area through advertisements in local and regional newspapers, and a brochure will be distributed a few weeks prior to the Information Centres.

You are encouraged to contact Project Team members at any time to discuss issues or request information. Please contact:

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Office

Ministry of Transportation
1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8

Tel: (416) 235-5522
Fax: (416) 235-4382

OR
(for the Highway 404 Extension)

Mr. Chris Ricketts, P.Eng.
Consultant Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Tel: (905) 882-4401
Fax: (905) 882-4399

OR
(for the Bradford Bypass)

Mr. Steve Schijns, P.Eng.
Consultant Project Manager
McCormick Rankin Consulting Engineers
2655 North Sheridan Way
Mississauga, Ontario
L5K 2P8
Tel: (905) 823-8500
Fax: (905) 882-8503

You may also record a message on the InfoSource Hotline in Bradford by telephoning (905) 775-5858 (box number 5600).

SUMMARY OF PUBLIC INFORMATION CENTRE #2

1.0 INTRODUCTION

The second series of Public Information Centres was recently held regarding the Environmental Assessment Study for the Highway 404 Extension - Davis Drive to Highways 12. The Information Centres provided the public an opportunity to review and discuss the project with representatives of the Project Team.

Five Information Centres were held throughout the study area. The dates and locations were as follows:

Tuesday June 14, 1994 *
Queensville Community Centre

Tuesday June 21, 1994
Zephyr Community Centre

Wednesday June 22, 1994
Sunderland Memorial Arena

Thursday June 23, 1994
Pefferlaw Lions Hall

Tuesday June 28, 1994
Keswick Optimist Hall

* Joint Information Centre with the Bradford Bypass Study

2.0 PURPOSE

The purpose of this series of Information Centres was to:

1. Present the Final Environmental Assessment Proposal including the revised:
 - statement of problem/opportunity;
 - study area boundary;
 - evaluation of Alternatives to the undertaking; and,
 - study process and consultation plan.
2. Present the data collected to date.

3. Present the process for generating corridors of opportunity.
4. Present the corridors identified.
5. Review proposed evaluation criteria and methods.
6. Receive input on evaluation criteria weighting.
7. Identify individuals interested in participating in workshops.
8. Gather information and identify concerns and issues.
9. Document the comments received from those in attendance.

3.0 PUBLIC NOTIFICATION

Prior to this series of Public Information Centres, the following measures were carried out in order to make details of the Information Centres known to study area residents and interested members of the public:

1. Brochures and Project update summaries were distributed to all municipal clerks for municipal councilor information and public review.
2. An Ontario Government Notice was placed in the following newspapers:

Toronto Star	Wednesday, June 1, 1994
Aurora Era Newmarket Banner	Wednesday, June 1, 1994
Georgina Advocate	Wednesday, June 1, 1994
Stouffville Uxbridge Tribune	Wednesday, June 1, 1994
Beaverton Express	Wednesday, June 1, 1994
3. Approximately 25,500 brochures detailing the project were sent to area residents inviting them to attend the Information Centres.
4. Letters and brochures were directly sent to those people on the Project Team's mailing list. This mailing list included:
 - MPP's
 - Cottage and Ratepayer Groups.
 - Chambers of Commerce.
 - Environmental Groups.
 - Heritage Groups.
 - Agricultural Groups.

- Other interested individuals that requested to be placed on the mailing list.

4.0 PRE-PIC MEETINGS

i) Municipal Team

Prior to the Public Information Centres meeting were held with municipal staff, and council.

The Municipal Team meeting was held on May 24, 1994 at the Town of East Gwillimbury municipal offices:

The dates of Council Presentations were:

- | | |
|----------------------------|---------------|
| • Region of York | June 9, 1994 |
| • Town of East Gwillimbury | June 6, 1994 |
| • Town of Georgina | June 2, 1994 |
| • Region of York | June 9, 1994 |
| • Township of Brock | May 30, 1994 |
| • Township of Uxbridge | June 13, 1994 |

The Town of Newmarket requested that the Council presentation be postponed as they are currently in discussions with the MTO and Region of York regarding the status of Herald Road/Green Line.

ii) External Team

The External Team was invited to attend drop-in meeting prior to the June 14 and June 28 Public Information Centres. The following External Team members attended:

- Lake Simcoe Region Conservation Authority
- Ontario Hydro
- Town of Georgina Fire Department
- Region of York Health Unit
- Durham Roman Catholic School Board
- Durham School Board

Subsequent follow-up meetings were held with the Lake Simcoe Region Conservation Authority, the Ministry of Natural Resources and the Ministry of Agriculture and Food.

5.0 MATERIAL DISPLAYED

The following display material was presented:

- Information boards Introducing the Study and the Environmental Assessment Process.
- Summary of the First Round of Consultation
- Revised Statement of Problem and Study Area.
- Summary of other Transportation Improvements Considered.
- Proposed Consultation Plan and a listing of Agencies and Interest Groups contacted to date.
- The proposed Route Generation Process and Secondary Data collected.
- Corridor Opportunities.
- Proposed Evaluation Process and Evaluation Criteria
- What's Next.

6.0 ATTENDANCE/COMMENTS

The following represents the number of visitors who chose to sign the sign-in sheet for this series of Public Information Centres:

- | | |
|---------------------------|-----|
| • Tuesday June 14, 1994 | 276 |
| • Tuesday June 21, 1994 | 81 |
| • Wednesday June 22, 1994 | 60 |
| • Thursday June 23, 1994 | 136 |
| • Tuesday June 28, 1994 | 91 |

The Public Information Centres provided the opportunity for interested individuals to sign-up for upcoming workshops to assist in the generation of route alternatives. A total of 157 signed-up for the various workshops.

In addition to verbal comments, Project Team members encouraged visitors to express, in writing, all comments and concerns they had regarding the information presented. The chart below document the number of comment sheets received.

DATE	ATTENDANCE	COMMENT SHEETS RECEIVED	% OF PEOPLE WHO FILLED IN A COMMENT SHEET
June 14, 1994 (Queensville)	276	11	4 %
June 21, 1994 (Zephyr)	81	10	12 %
June 22, 1994 (Sunderland)	60	10	17 %
June 23, 1994 (Pefferlaw)	136	12	9 %
June 28, 1994 (Keswick)	91	14	15%
Sheets mailed in	-	34	N/A
Total	644	91	14%

Among the 91 written comments sheets received from this series of Public Information Centres, the most common comments expressed were:

COMMENT	#
• Supports north corridors	12
• Process takes too long	8
• Ravenshoe Road should be considered as a corridor	5
• Rail and other commuter services should be improved as opposed to highway development	5

The following represents a summary of all written comments received:

COMMENT	#
• Supports north corridors	12
• Process takes too long	8
• Ravenshoe Road should be considered as a corridor	5
• Rail and other commuter services should be improved as opposed to highway development	5
• Rail and other commuter services should be improved in addition to highway development	4
• Highway will just encourage more development	3

• Widen other roads as opposed to constructing a new facility	3
• Supports south corridors	3
• Concerned about environmental impacts	2
• Does not agree with future growth scenario	2
• Concerned about business bypass impacts	2
• Concerned about private property impacts	2
• Social Environment not properly addressed	2
• Impacts to marshes and swamps should be less important	2
• Concerned about agricultural impacts	2
• Interest Groups have too much influence	2
• Concerned about impacts to heritage features	1
• Should have meaningful opportunity to participate prior to the assessment of Alternatives to the Undertaking	1
• Businesses should be encouraged to move north to reduce commuter demand	1

The questionnaire component of the comment sheet was completed by 73 people. The result of this survey is outlined below:

1. Does the revised Problem/Opportunity Statement reflect the transportation issues that should be addressed?
Yes 90% (64) No 10% (7)

Of those that responded no, the following explanations were given:

- The whole approach focuses on cars, a more foresighted solution would focus on alternative forms of transportation.
 - The plan is based on the growth patterns of the 1980's. The projected growth is unrealistic.
 - Slim chance of full projected growth in housing in this area.
 - Should be developing a network of trains, subway, LRT's and buses.
 - The south route will only increase traffic problems whereas the northern route will reduce traffic congestion of the communities around Lake Simcoe.
 - The southern route opportunity does not address the transportation needs which are much greater in the northern areas.
 - One negative response with no further explanation.
2. Do you agree that a controlled access freeway is the best solution to the problem? Yes 84% (61) No 16% (12)

Of those that responded no, the following explanations were given:

- Extensive commuter rail service.
- Personal experience reveals no problems in the area, a highway will only encourage more development in the area.
- A freeway just encourages the commuter lifestyle, centered on the car and this just aggravates the problem.
- Paving the existing sideroads would provide alternatives to existing highways.
- We can move more people per cost per km by utilizing existing and expanding railways.
- I feel it is the only probable solution. Ideally should be looking at better rapid transit. However, alot of the local traffic problems are cottage owners travelling on weekends.
- Provincial Planning should not promote sprawl development.
- A multi-lane arterial with access to existing roads (i.e. Hwy 11 north of Barrie) would work well for the Bradford Bypass & Highway 404.
- We should encourage business to move north thus providing jobs and removing the need for so many people to commute (High incentives to business).
- A limited access Highway similar to Highway 11 in the Orillia area would better serve both the business and transportation needs of those who would be most affected by the Highway.
- Should be developing a network of trains, subway, LRT's and buses.
- Secondary Roads (i.e. Ravenshoe, Davis) could be used.

3. Do you support the revised consultation plan?
Yes 88% (61) No 12% (8)

Of those that responded no, the following explanations were given:

- Try asking the people that settled here to escape the endless development that is perpetuated by wealthy builders and ever greedy government.
- Details are still too vague.
- Less consultation and get something done.
- They are all B.S.
- Too slow.
- The Ravenshoe Road option has been rejected before consultation with Georgina.
- The people of Georgina should have priority over people from the Toronto Area.
- Include proposed routes on all public notices.

4. Do you agree with the identified opportunity areas for route

generation? Yes 83% (60) No 17% (12)

Of those that responded no, the following explanations were given:

- The proposed highway is totally unnecessary. The only people it will benefit are people who live in Toronto and are wealthy enough to own a cottage.
- Still too vague.
- Upgrade Highway 48
- If the goal is to move people efficiently then the route should be through the most populated areas - conversely because of pocket development in Georgina keep this major artery in the less densely populated areas (i.e. Ravenshoe Road).
- We think the Highway would best serve everyone if it stayed close to Lake Simcoe as much as possible.
- Ravenshoe Road corridor appears to be the most logical. In my opinion an absurd emphasis is placed on the value of a swamp.
- The south route should not be an alternative.
- The southern route should not even be considered.
- Do not believe the south route is viable.
- Keep the Highway on the south end of Georgina.
- Ravenshoe Road should be a corridor opportunity.
- Corridors have been selected without the use of all existing documentation.

5. Do you agree with the proposed evaluation methods which will be used to select among route alternatives? Yes 88% (63) No 12% (9)

Of those that responded no, the following explanations were given:

- Remove the value of the so-called wetlands. We have millions of acres of swamp in Canada.
- Social Environment is not addressed properly.
- The lifestyle of the rural residents is sacrificed for urban communities.
- Social Environment is much more important than by your weighting system.
- Would seem to give too much weight to small interest groups
- Keep it simpler, weight should not enter into it. Use the method of 1-10 for decisions with no total of 10 or 100.
- Resident of Georgina should have priority over government plans or people for the Toronto Area.
- Ravenshoe Road should have been included.
- One negative response with no further comments.

ONTARIO GOVERNMENT NOTICE

NOTICE OF SECOND SERIES OF PUBLIC INFORMATION CENTRES Highway 404 Extension - Davis Drive to Highway 12 Environmental Assessment Study

The Ministry of Transportation (MTO) is carrying out an Environmental Assessment Study to examine transportation improvements between the terminus of Highway 404 at Davis Drive and Highway 12. Your input is important to us.



The purpose of this series of Public Information Centres is to present:

- The revised Environmental Assessment Proposal
- Data collected to date
- Opportunity areas for route generation
- The proposed evaluation process to select amount route alternatives

HOW TO GET INVOLVED

We are inviting you to attend the upcoming series of Public Information Centres so we can organize future participation. The Public Information Centres will be used for identifying if, and how, you or your group wish to take an active role in the decision-making process through planned workshops and meetings. At the Public Information Centres a survey will also be distributed to obtain input into the relative importance of criteria to be used to select the preferred route.

If you cannot attend any of these Public Information Centres but wish to be involved in upcoming workshops or would like to complete the evaluation criteria survey please contact Michael Bricks at 905-882-4401

UPCOMING INFORMATION CENTRES

The second in a series of five Public Information Centres have been arranged for:

TUESDAY JUNE 14, 1994
3:00 p.m. to 9:00 p.m.
QUEENSVILLE COMMUNITY CENTRE
1590 Queensville Sideroad
Queensville, Ontario

WEDNESDAY JUNE 22, 1994
3:00 p.m. to 9:00 p.m.
SUNDERLAND MEMORIAL ARENA
20 Park Street, 2nd Floor
Sunderland, Ontario

TUESDAY JUNE 28, 1994
3:00 p.m. to 9:00 p.m.
KESWICK OPTIMIST HALL
Arena Road
Keswick, Ontario

TUESDAY JUNE 21, 1994
3:00 p.m. to 9:00 p.m.
ZEPHYR COMMUNITY CENTRE
Durham Regional Road #13
Zephyr, Ontario

THURSDAY JUNE 23, 1994
3:00 p.m. to 9:00 p.m.
PEPPERLAW LIONS HALL
Peters Lane
Pefferlaw, Ontario

TO WRITE OR CALL US

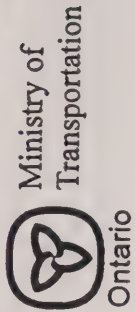
Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Office
Ministry of Transportation
3rd Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8
Tel (416) 235-5522
Fax: (416) 235-4382

or

Mr. Chris Ricketts, P. Eng.
Consultant Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Tel: (905) 882-4401
Fax: (905) 882-4399

This study is subject to the review and approval requirements of the Environmental Assessment Act, as administered by the Ministry of the Environment and Energy of Ontario. Information and comments obtained during the study will be kept on file for use in carrying out the Environmental Assessment and unless otherwise requested, may be included in documentation which is made available for public review. Names and addresses will be kept confidential.



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12

ENVIRONMENTAL ASSESSMENT STUDY

BROCHURE #3

SECOND SERIES OF PUBLIC INFORMATION CENTRES

Tuesday, June 14, 1994
and
Tuesday, June 21, 1994
and
Wednesday, June 22, 1994
and
Thursday, June 23, 1994
and
Tuesday, June 28, 1994

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STUDY AREA (Revised since first series of Public Information Centres - see Brochure #2 for explanation)

Public Information Centres

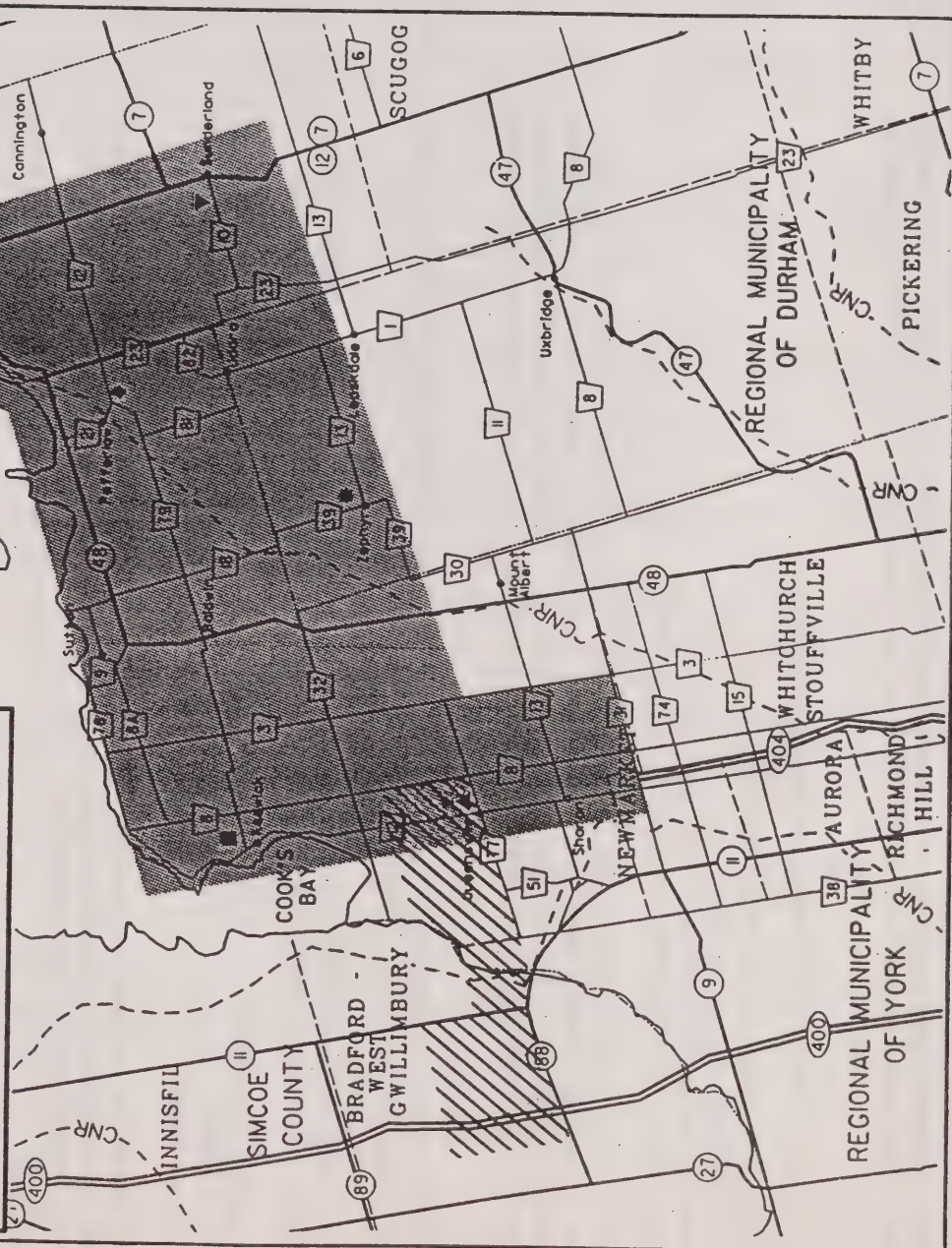
- ▲ Queensville Community Centre
- Keswick Optimist Hall
- * Zephyr Community Centre
- ◆ Pefferlaw Lions Hall
- ▼ Sunderland Memorial Arena

Study Areas

(Routes To Be Generated Within This Area)

HIGHWAY 404

ADJACENT PROJECT (Bradford Bypass)



The second series of Public Information Centres will be held on:

TUESDAY, JUNE 14, 1994*

3:00 p.m. to 9:00 p.m.

QUEENSVILLE COMMUNITY CENTRE

1590 Queensville Sideroad (East of Leslie Street)

TUESDAY, JUNE 21, 1994

3:00 p.m. to 9:00 p.m.

ZEPHYR COMMUNITY CENTRE

Durham Regional Road # 13

WEDNESDAY, JUNE 22, 1994

3:00 p.m. to 9:00 p.m.

SUNDERLAND MEMORIAL ARENA

20 Park Street, 2nd Floor

THURSDAY, JUNE 23, 1994

3:00 p.m. to 9:00 p.m.

PEPPERLAW LIONS HALL

Peters Lane

TUESDAY, JUNE 28, 1994

3:00 p.m. to 9:00 p.m.

KESWICK OPTIMIST HALL

Arena Road

Information and comments obtained during this study will be maintained as a public data base and will be kept on file (names and addresses will be kept confidential).

For further information, please contact:

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Office

Ministry of Transportation
1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
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Drive East
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Fax: (905) 882-4399

* Joint Public Information Centre with the Bradford Bypass Study. An additional Public Information Centre for the Bradford Bypass Study is scheduled for June 16, 1994 in Bradford.

April 1994, a project update brochure was sent to area residents and interested individuals. At that time, it is mentioned that a series of Public Information Centres would be arranged for June 1994. The dates for these Information Centres have now been finalized.

The purpose of this series of Public Information Centres is to present:

- The revised Environmental Assessment Proposal
- Data collected to date
- Opportunity areas for route generation
- The proposed evaluation process to select among route alternatives

We are inviting you to attend the upcoming series of Public Information Centres so we can organize future participation. The Public Information Centres will be used for identifying if, and how, you or your group wish to take an active role in the decision-making process. The consultation plan (below) indicates opportunities for various meetings or workshops. If you feel that other input forums would be useful, please let us know.

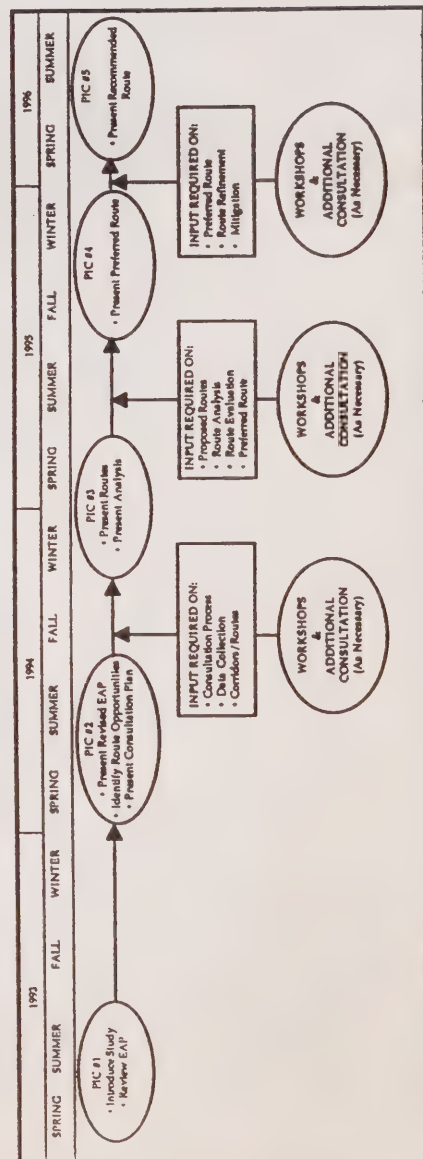
At the Public Information Centres we will also distribute surveys to obtain input into the relative importance criteria to be used in choosing the preferred route.

You cannot attend any of these Public Information Centres but wish to be involved in upcoming workshops, you would like to complete the evaluation criteria survey, please contact Michael Bricks at (905) 882-4401.

In addition to these workshops, groups and individuals are encouraged to contact project team members for additional information. Requests for additional meetings with groups of individuals to discuss issues and concerns are encouraged.

Public Information Centres provide an excellent opportunity to further our inventory of study area features. In particular, we are requesting farmers to discuss farming practices with us so we can generate routes that attempt to minimize impacts on these operations.

Consultation Plan



SUMMARY OF WORKSHOP #1

1.0 INTRODUCTION

The first series of workshops were held in September 1994 for the Highway 404 Extension Environmental Assessment Study. The primary purpose of these workshops was to obtain additional information on the Study Area to assist in the corridor refinement and route generation process. A secondary purpose of these workshops was to further inform area residents about the study and study process.

The following measures were used to inform people about these workshops:

- Ontario Government Notices were placed in the Toronto Star, Aurora Era, Newmarket Banner, Georgina Advocate, Beaverton Express and Stouffville Uxbridge Tribune requesting interested individuals to attend the second series of Public Information Centres in order to sign-up for the workshops, or contact the Project Team directly to sign-up for the workshops;
- Brochures were distributed to all study area residents (approx. 25,000) requesting interested individuals to attend the second series of Public Information Centres in order to sign-up for the workshops, or contact the Project Team directly to sign-up for the workshops; and
- The workshop concept was explained on display boards, and at staffed sign-up table at the second series of Public Information Centres. Project Team members encouraged attendees to sign-up for these workshops

At the Public Information Centres, a total of 154 people expressed interest in attending the workshops, an additional 3 people contacted the Project Team to request an invitation to these workshops.

To accommodate the large number of people that signed up for the workshops, four workshops were arranged at various locations in the Study Area. Interested parties were sent an invitation letter and an agenda for the workshop closest to their residence. A note was added to each letter informing people that if they could not attend the workshop they should contact the Project Team to inquire about other workshop dates and locations.

The following chart summarizes participation in these workshops.

DATE	INVITED	ATTENDED	%
Sept. 12, 1994 (Zephyr)	34	13	38 %
Sept. 19, 1994 (Keswick)	39	13	33 %
Sept. 21, 1994 (Sharon)	57	28	49 %
Sept. 22, 1994 (Pefferlaw)	28	39	140 %
Total	157	93	59 %

2.0 FORMAT

The purpose of the workshops was to collect additional information to assist in the Corridor Refinement and Route Generation Process. Information on three major topics areas (Natural Environment, Agricultural Operations, and Socio-Economic Environment) were sought.

The first half of the workshops focused on reviewing the existing data collected for the Natural Environment and Agricultural Operations. Participants were divided into two groups. Each group spent approximately 45 minutes with a Project Team specialist reviewing existing data and adding new information where possible.

The second half of the workshop focused on scoping social environment issues.

Participants at these workshops were also asked to sign-up for a heritage and archeological workshop. This workshop was held on November 21, 1995 at the Egypt Hall and was attended by 21 people.

2.1 NATURAL ENVIRONMENT

PURPOSE

The purpose of the natural environment session was to review the existing data collected to date and obtain further information on the natural features from residents in the study area.

METHOD

This session was facilitated by Deborah Martin-Downs, a biologist with Gartner Lee Limited. Ms. Martin-Downs responsibilities on the project include:

- 1 Collecting baseline natural environment data used to generate corridors and routes.
- 2 Assessing the impacts to the natural environment for routes generated.
- 3 Conducting a detailed assessment of the recommended route and developing appropriate mitigation measures.

At the start of each meeting Ms. Martin-Downs provided an overview of the information collected to date and explained how it was used to generate the corridors shown to the public at the second series of Public Information Centres.

Maps showing the location of natural features and selective species information were available for workshop attendees to review. The input

sought focused specifically on the accuracy of natural feature boundaries, requests for additional information about species known to inhabit the area, locations of key habitat areas and movement patterns.

RESULTS

Area residents that attended provided information about specific species known to inhabit the area and locations of wildlife movement corridors. This information was added to the project database for analysis purposes.

These sessions provided the opportunity for local residents to develop a rapport with study team members and obtain a better understanding of the study process and the work that will be done to assess natural environment impacts .

2.2 AGRICULTURE

PURPOSE

The purpose of the agricultural session was to review the existing data collected to date and obtain further information on agricultural operations from farmers in the study area.

METHOD

This session was facilitated by Paul Neals, an agronomist with Gartner Lee Limited. Mr. Neals responsibilities on the project include:

1. Collecting baseline data used to generate corridors and routes.
2. Assessing the impact that a highway will have on the viability of agricultural operations and the local agricultural economy.
- 3 Conducting a detailed assessment of the recommended route and developing appropriate mitigation measures.

Mr. Neals gave an overview of the information collected to date. It was noted that the primary factor in corridor generation was the avoidance of significant natural features and large urban areas. Route generation would consider ways to minimize impacts to agricultural operations through design (i.e avoidance or minimizing property requirement) and mitigation.

It was noted that in addition to secondary source information obtained from the Ministry of Agriculture, Food and Rural Affairs, field investigations and airphoto interpretation have been conducted for lands within each corridor. Farmers in attendance were asked to identify the location and type of their operations and discuss the linkages they have with other operations.

RESULTS

In addition to receiving information on individual farming operations and providing a forum to provide area residents with a better understanding of the study area and the work that will be completed to assess agricultural impacts, this session provide a forum for issue identification.

The issues identified included:

- Concern about the effect on the rural community;
- Air quality and road run-off (salt) effect on farming operations;
- Ground water impacts;
- Impact to the municipal tax base; and,
- Impacts to property access and farm equipment movement.

2.3 SOCIO-ECONOMIC ENVIRONMENT

PURPOSE

At this stage in the study, the purpose of the socio-economic session was to document the attitudes and opinions that people, directly or indirectly impacted, hold with respect to the extension of Highway 404 EA.

METHOD

Chris Murray, an environmental planner with Cole, Sherman, & Associates Limited was introduced as the Project Team's socio-economic environment assessor. Mr. Murray's responsibilities on the project are as follows:

1. Consulting with interested stakeholders, via workshops, follow-up meetings and personal interviews, to determine their opinions and attitudes towards the extension of Highway 404. This information will help the Project Team scope the issues that will be most relevant when designing and evaluating route alternatives;
2. Collecting socio-economic baseline data that will allow the projection of future conditions with and without the highway;
3. Determining the relevance (duration, direction and magnitude of change) of projected net impacts; and
4. Comparing the key differences between alternatives and assist the Project Team with the selection of a preferred alternative.

Social impacts are changes that occur in people's way of life, their cultural traditions, and their community as a result of the development and

implementation of a new project and that are experienced by these people as significant events (Armour, 1987). There are two types of social impacts:

- i) standard impacts, and
- ii) special impacts.

A standard impact is one which is either a direct or indirect result of changes in the environment that are brought about by the proposed undertaking (i.e., the new four-lane controlled access highway) (OWMC, 1988 p. 9.1). Standard impacts include:

- Nuisance Impacts:
 - noise
 - pollution
 - traffic
 - dust
 - visual intrusion
- Displacement of Residents
- Displacement of social/community facilities
- Disruption of day-to-day activities
- Disruption of use and enjoyment of property
- Change in property value
- Change in land use patterns

A special impact is an impact which results from perceptions created by a proposed undertaking and the risks associated with it (OWMC, 1988). Special impacts include:

- Social and psychological impacts (during and after planning):
 - Fear and Anxiety
 - Psychological Stress
 - Health Effects
- Loss of Community Character, Cohesion and/or Stability
 - Expectations have Changed
 - Sense of Belonging has Changed
 - Disrupted Social Relationships
- Trust
 - Gov't Has No Concern for Community/Individual Best Interest
 - Public is Informed versus Consulted
- Loss of Control Over Ones' Environment
- Social Equity (Are Benefits and Dis-Benefits Fairly Distributed)

At the start of each session, Mr. Murray asked workshop attendees to identify their properties on a 1:10,000 scale airphoto mosaics. This information would help the Project Team understand how representative the opinions and attitudes were of the focus area.

Mr. Murray stated that the existing information he has collected (i.e., assessment, windshield land use survey and municipal planning reports) needs to be augmented by information concerning attitudes and opinions of those directly and indirectly impacted as well as site specific information available through area residents. He also stressed that this workshop should be regarded as a beginning and not an end to the assessment of socio-economic impacts. Workshop attendees were encouraged to contact Mr. Murray if they had, or knew people that had, information on area families, community organizations, community character etc.

RESULTS

The attitudes and opinions expressed can be summarized into the following categories of concerns:

- Noise impacts;
- Air pollution impacts;
- Traffic impacts on local roads;
- Visual intrusion;
- Property value effects;
- Emergency service response time;
- Residential displacement;
- Changes to land use patterns;
- Well water impacts;
- Public facility displacement;
- Impacts to the agricultural economy;
- Impacts to the tourism economy;
- Impacts to local businesses;
- Effect on the tax base;
- Disruption of day to day life;
- Loss of community character and cohesion;
- Social and psychological impacts;
- Lack of trust of government decision-making; and,
- Social equity.

Other comments received included questions on need for the highway, route location and access design, consultation process, evaluation process. Information was also received on community boundaries.

A detailed listing of opinions and attitudes is outlined in the Appendix.

2.4 ARCHAEOLOGY AND HERITAGE ENVIRONMENT

PURPOSE

The purpose of the archaeology and heritage workshop was to review the

existing data collected to date and to obtain further information from residents on significant built heritage and archaeological sites in the study area.

METHOD

The workshop was facilitated by Gary Warrick, MTO Regional Archaeologist and Ruth Zaryski-Jackson, MTO Heritage Planner. Gary Warrick's responsibilities on the project are:

1. Compile archaeological site data to be used in the generation of corridor and routes.
2. Evaluate the impacts to known archaeological sites for the routes generated.
3. Conduct a field assessment of the recommended route and carry out appropriate mitigation measures for significant archaeological sites that will be impacted.

Ruth Zaryski-Jackson's responsibilities have included a windshield survey of the study area to identify significant built heritage features and cultural landscapes which will be used in the generation of routes.

At the beginning of the meeting, participants were divided into two groups. Each group met with one of the facilitators for an hour then switched to the other group for an other hour.

In the archaeology section, Gary Warrick provided an overview on known sites from the Ministry of Culture, Tourism and Recreation database and explained how this information was used to generate corridors presented to the public at the second series of Public Information Centres. A map showing the general location of known sites was available for the public to review. Input was sought regarding unregistered sites, private collections of artifacts and exact locations of known sites,

In the built heritage section, Ruth Zaryski-Jackson explained how data was gathered and asked participants to identify any additional sites. A map showing the locations of identified built features and historical settlements was presented and participants were asked for input regarding unidentified sites and the exact location of known sites.

3.0 CONCLUSION

These workshops provided an additional forum for the Project Team to collect additional information from area residents to refine corridors and generate routes.

These workshops also allowed area residents an additional opportunity to become familiar with the study process and the work that will be completed to select a preferred alternative.

APPENDIX

Workshop #1 - Zepher, Monday September 12, 1994

Standard Impacts:

- farm productivity will be negatively impacted by higher noise and air emissions and access restrictions;
- adjacent residences will be negatively impacted by higher noise and air emissions;
- land values will decline;
- emergency response times will increase because of access restrictions, more services will be required to compensate for the loss and taxes will increase as a result;
- development will significantly increase because of improved access to the area and viable farmland will disappear;
- construction activity will produce dust and negatively impact water quality;
- well water will be negatively impacted;
- economic viability of hobby farming will be effected;
- economic loss to local businesses (tourism and regulars);
- farm vehicles will be more heavily regulated;
- safety problems until highway is constructed; and
- landscape will be negatively impacted

Special Impacts:

- study area residents will benefit little from this highway;
- community will be splintered;
- keeping large parcels together will be more cohesive;
- pressure on farm life
- invasion of privacy;
- urban will result in less support for community activities; and
- smaller communities have better linkages;

Other Comments:

- Put route where development exists.
- What is the construction time frame?
- Not making any more farmland.
- Northern corridor would be better for the highway given it is flatter and has poorer farmland.
- Must preserve farmland.
- Should minimize land severance's.

Workshop #2 - Keswick, Monday September 19, 1994

Standard Impacts:

- residential displacement;
- noise impact will change the quiet nature of the Baldwin community;
- traffic will infiltrate the Baldwin community if an interchange is located at Highway 48;

- community access must be maintained;
- property values will be sterilized;
- Highway will not benefit the Briars (tourist resort located at Jackson's Point);

Special Impacts:

- because the Elm Grove community lies entirely within one of the northern corridors, it will be severely impacted by highway development;
- Elm Grove is close knit community. A number of representatives expressed a great deal of concern over the potential displacement of their neighbours and general impact to the community;
- character of the Baldwin Community and area as a whole will change completely;
- the thought of a highway coming through the community creates great stress;
- community has not been adequately involved in the study;
- the highway will destroy community cohesion (highway seen as the "Great Wall of China");
- increased social problem (crime and unemployment) will result from the construction of the highway;
- the character of Sutton will change if commuter population increases;
- it has taken years to pull the Town of Georgina together after Highway 48 was built.
- the EA process itself has a major impact on people's lives;

Other Comments:

- Sites of cultural/historical value within Elm Grove were identified and duly documented.
- High amount of truck traffic occurs day and night through Baldwin;
- Can currently hear truck traffic from Highway 48.
- How will the farming community be defined?
- Need proper overpasses.
- Will the highway be needed in twenty five years?
- Highway will increase access to job markets.
- Attendees perception of their community boundary extends quite a distance.
- Keswick is not part of the rural community.
- Sutton is self-contained.
- Keswick is an urban community not in character with the surrounding area.
- Should balance the consideration given to social needs vs. animals.
- Concerned that workshop notification was not properly administered.
- Suggestion that a heritage workshop be held.
- Meeting should have been held at the Egypt Community Centre.
- Concern regarding uncertainty in the EA process.
- Attendees expressed support for smaller meetings.
- Need for the highway is to serve Keswick and cottagers.

Workshop #3 - Sharon, Wednesday September 21, 1994

Standard Impact

- noise from the highway will be a significant issue;
- concern about access to Sharon (Mount Albert or Green Lane);
- road salt will have a negative impact on water supply;
- increased travel time for emergency access (fire mentioned specifically);
- air pollution;
- displacing farmers;
- access restrictions;
- major impact on cattle farming and agricultural viability as a whole;
- must establish linkages between grain and cattle farming;

Special Impact

- lack of trust over what government will do;
- who will stay after the highway is constructed;
- Sharon is a special community with a rural lifestyle;
- Bradford link will divide area in half creating have and have not communities (road will split community very badly in northern township);
- character of the community will change if Sharon becomes a bedroom community;
- must preserve character;
- keeping the community intact is of highest priority;
- social impact on village and rural area;
- input from people is critical before and after the route alignments are drawn on the map;

Other Concerns

- How will people be compensated?
- Want bypass to take traffic off the existing roads.
- The Bradford link with Highway 404 will form the northern boundary to Metro.
- Maple Road should be changed to Boag Road.
- Historical significance of Sharon is very important.
- Following concession lines will have less of an impact on the rural community.
- Will Leslie Street have to be widened if an interchange is located at Green Lane?
- Interchange could be between 5th and 6th concession.
- Can the province financially afford this highway?
- Cost should be used to select the preferred alternative.
- Has MTO been to Council yet?
- Sharon Council should host a meeting to discuss impacts.
- Hurry and build the highway.

Workshop #4 - Pefferlaw, Thursday September 22, 1994

Standard Impact:

- highway is not visually attractive;
- noise (walls are not attractive);
- residential displacement;
- air pollution;
- route through Pefferlaw would displace Morning Glory School;
- roadway will impact water supply;
- property value will decrease;
- tourism and recreation will be negatively impacted;
- maintain community linkages;

Special Impact:

- must establish travel patterns to churches, schools etc. in order to understand what impact the highway will have when it divides the community;
- highway will destroy the Elm Grove community;
- Elm Grove community is highly cohesive;
- people in Elm Grove like each other and would not want to see anyone displaced
- people are experiencing significant stress over the uncertainty;
- corridor through Elm Grove couldn't be worse;
- quality of life in the rural community will be lost if it becomes a suburb of the GTA;
- route through Pefferlaw will impact a major portion of the community;
- attendees feel the decision has already been made;
- the need for the highway issue will divide the community;

Other Concerns:

- Elm Grove recently refurbished the community school house.
- Have to fight process, don't know if Elm Grove will become a ghost town.
- provincial policies are strict on preserving natural environment and not on rural communities;
- Highway 48 cannot handle truck traffic. This will get worse as time goes on.
- Highway 48 is dangerous.
- Very serious problem at the junction of Highway 48 and Highway 12.
- Highway 404 is needed to make other roads safe.
- The volume of aggregate trucking is increasing. Why can't this be hauled by trains?
- Need and justification needs to be reviewed and explained.
- Why not widen along Davis Drive?
- Can't believe regional roads are jammed today.
- Limited access may alleviate traffic problems.
- Follow hydro corridor.

- Currently takes one resident on Ravenshoe Road 20 minutes to leave driveway during the morning peak period.
- Pefferlaw Lions Hall is not a good facility to hold a workshop. The room echoes to much.

NOTE: At the beginning of the workshop, 5 - 10 attendees expressed significant concern over the manner in which they have been involved in the process. Issues focused around the need for the highway and the lack of opportunity people have had to comment on the Environmental Assessment Proposal.

SUMMARY OF PUBLIC INFORMATION CENTRE #3

1.0 INTRODUCTION

The third set of Public Information Centres for the Environmental Assessment Study for the Highway 404 Extension - Davis Drive to Highway 12 was held in March and April of 1995. The Information Centres provided the public with an opportunity to review and discuss the project with representatives of the Project Team.

Five Information Centres were held in the study area. The dates and locations were as follows:

Monday, March 27, 1995
Queensville Community Centre

Tuesday, March 28, 1995
Egypt Community Centre

Wednesday, March 29, 1995
Udora Community Centre

Monday, April 3, 1995
Pefferlaw Lions Hall

Thursday, April 6, 1995
Beaverton Memorial Arena

2.0 PURPOSE

The purpose of this set of Information Centres was to:

1. Present the Preliminary Route Alternatives.
2. Present the proposed method for selecting a Preferred Route.
3. Sign-up for upcoming workshops.

3.0 PUBLIC NOTIFICATION

Prior to this series of Public Information Centres, the following measures were carried out to notify study area residents and interested members of the public of the Information Centres:

1. Brochures and project update summaries were distributed to all municipal clerks for municipal council information and public review.
2. An Ontario Government Notice was placed in each of the following newspapers:

Toronto Star	Saturday, March 18, 1995
Stouffville Uxbridge Tribune	Saturday, March 18, 1995
Georgina Advocate	Monday, March 20, 1995
The Era-Banner	Tuesday, March 21, 1995
Beaverton Express	Tuesday, March 21, 1995
3. Approximately 25,500 brochures detailing the project were sent to area residents inviting them to attend the Information Centres.
4. Letters and brochures were directly sent to those people on the Project Team's mailing list. This mailing list included:
 - MPP's
 - Cottage and Ratepayer Groups.
 - Chambers of Commerce.
 - Environmental Groups.
 - Heritage Groups.
 - Agricultural Groups.
 - Other interested individuals that requested to be placed on the mailing list (approximately 750 people).
5. Numerous articles covering council presentations were published by local and regional newspapers providing area residents with a project update and dates and locations of Public Information Centres.
6. Project Team members attended on a local talk show on Trillium Cable Television (February 16, 1995) to discuss the project and answer phone-in questions from the community.

4.0 PRE-PIC MEETINGS

i) Municipal Team

Prior to the Public Information Centres, meetings were held with municipal staff, and councils.

Meetings with Planning and Engineering staff were held on the following dates:

- Region of York February 22, 1995
February 28, 1995
- Town of Georgina February 22, 1995
- Town of East Gwillimbury February 23, 1995
- Durham (Brock, Uxbridge and Durham) February 24, 1991

The dates of Council Presentations were:

- Town of Georgina February 27, 1995
- Township of Brock February 27, 1995
- Region of Durham March 1, 1995
- Town of East Gwillimbury March 6, 1995
- Town of Newmarket March 7, 1995
- Region of York March 9, 1995
- Township of Uxbridge March 13, 1995

ii) External Team

Prior to the Public Information Centres meetings were held with key review agencies. Meetings held included:

- Ministry of Natural Resources February 28, 1995
- Lake Simcoe Region Conservation Authority March 3, 1995
- Ministry of Agriculture, Food and Rural Affairs March 14, 1995

The External Team was invited to attend a drop-in meeting prior to the March 27th Public Information Centre. The following External Team members attended:

- Lake Simcoe Region Conservation Authority
- Ontario Hydro
- Town of Georgina Fire Department
- Region of York Health Unit
- Durham Roman Catholic School Board
- Durham School Board

- Canada Coast Guard

5.0 MATERIAL DISPLAYED

The following display material was presented:

- Information boards introducing the study and the Environmental Assessment Process.
- Summary of the second round of public consultation
- Route generation process.
- Refinement of corridor opportunities
- Preliminary route alternatives.
- Proposed interchange locations.
- Proposed evaluation process and evaluation criteria
- What's next.

6.0 ATTENDANCE/COMMENTS

The following chart illustrates the number of visitors who chose to register their attendance for this series of Public Information Centres:

The Public Information Centres provided the opportunity for interested individuals to sign-up for workshops. A total of 393 individuals signed-up for the various workshops.

In addition to verbal comments, Project Team members encouraged visitors to express, in writing, all comments and concerns they had regarding the information presented. The chart below document the number of comment sheets received.

DATE	ATTENDANCE	COMMENT SHEETS RECEIVED	% OF PEOPLE WHO FILLED IN A COMMENT SHEET
March 27, 1995 (Queensville)	379	32	9
March 28, 1995 (Egypt)	253	25	11
March 29, 1995 (Udora)	251	38	15
<i>Highway 404 Extension PIC #3 Report</i>	4		

April 3, 1995 (Pefferlaw)	252	36	14
April 6, 1995 (Beaverton)	134	12	11
Sheets mailed in	0	39	0
Total	1269	182	14

The following represents a summary of the written comments received from this series of Public Information Centres:

- North alternatives make more sense because they would better serve future population
- There is no need for a highway
- Roadway improvements and/or increased transit should be used to accommodate future demand
- Concern about effects to the rural character of area
- Concern about noise impacts
- Concern about natural environment impacts
- Speed up planning and construction
- Concern about agricultural impacts
- Concern about air pollution
- PIC was a good forum to present information and get questions answered
- Concern about impacts to the TFN Nature Reserves
- South routes are most logical choice because they are straight to Hwy 12 and provide a connection to Hwy 7
- Routes appear to be well thought out
- Highway will provide economic benefit to the area
- Property and lifestyles should take precedent over natural environment
- Concern that the Toronto Field Naturalists did not receive a notification letter
- The Province is in debt and cannot afford a new highway
- Study Area should be extended further South to consider existing corridors (Green Lane, Davis Drive)
- Pefferlaw should not be impacted to serve Keswick and Sutton traffic
- Should be encouraging employment to the area to reduce commuter demand
- North routes minimize impacts to the Natural Environment
- Highway will only provide benefits to cottagers but local residents will be left with the impacts
- Concern about potential impacts to local water quality
- Highway will act as a bypass and have negative impacts on the local economy
- Concern about impacts associated with Pefferlaw crossing
- Concern about decreases in property value due to increased noise
- North route produces too many social and economic impacts
- North route results in a duplication of service (Hwy 48)
- Impacts of Highway will outweigh any benefits

- Route which minimizes cost should be selected
- Highway should be routed along Hwy 12 between north and south junctions of Hwy 48
- Eastern Alternative will impact Beaverton's ability to grow
- Highway will help reduce accident rates
- Church would like to work with MTO early if property is required so they could make plans for the Camp
- Building a Hwy for cottage traffic is redundant because cottage trips will decrease in the future
- Median should be wide enough to allow future expansion
- Toll Road should be considered
- Prior to this set of PICs project was not publicized enough
- Highway will decrease safety
- Uncertainty of planning process has negatively impacted property values
- Highway will only encourage development
- Highway 404 should be extended to Highway 48 and Highway 48 should be widened
- Concerned about increased traffic on local roads as a result of the Highway
- Why were no routes considered in the existing rail or hydro corridors?
- Costs, not impacts, will drive the route selection process
- South routes should be preferred because they appear less disruptive
- Should displace existing development rather than natural areas
- The impacts associated with the connection to the Bradford By-pass should be a major consideration
- Appreciate that public comments have been used to minimize impact to Elm Grove
- North route will create a physical and psychological barrier between Pefferlaw and Lake Simcoe
- Natural Environment appears to have taken precedent over existing communities
- Appears that routes generated produce maximum impacts to inhabitants and natural environment
- Concerned about the impact on tourism as a result of increased noise and air pollution

Rose of Sharon Services for young mothers

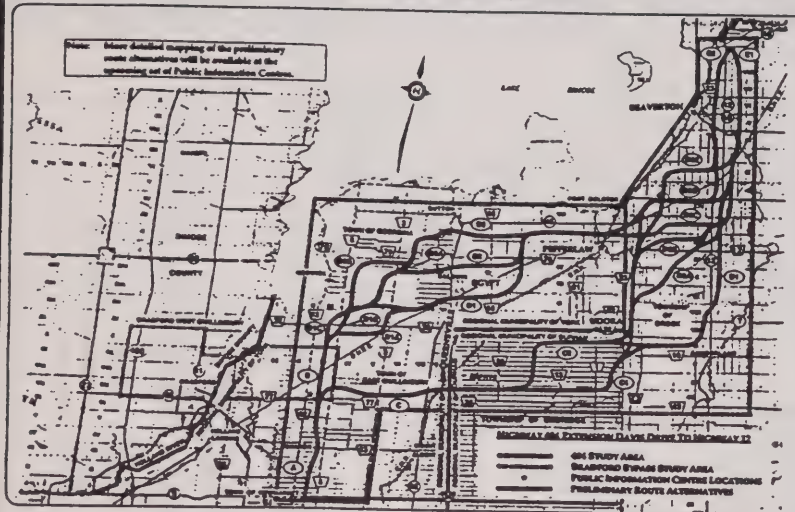
Rose of Sharon Services for young mothers provides support and educational services to young pregnant women and young single mothers throughout York Region. Rose of Sharon's mandate is to assist young, single parents to break the cycle of poverty, so that they may become confident and contributing members of their community. (905) 853-5514



ONTARIO GOVERNMENT NOTICE

NOTICE OF THIRD SERIES OF PUBLIC INFORMATION CENTRES
Highway 404 Extension - Davis Drive to Highway 12
Environmental Assessment Study

The Ministry of Transportation (MTO) is carrying out an Environmental Assessment Study to examine transportation improvements between the terminus of Highway 404 at Davis Drive and Highway 12. Your input is important to us.



The purpose of this set of Public Information Centres is to:

- Present the Preliminary Route Alternative;
- Present the proposed method for selecting a Preferred Route; and,
- Sign-up for upcoming workshops.

THE WORKSHOPS

Following this set of Public Information Centres, workshops will be arranged to allow interested individuals the opportunity to further participate in the study. The objectives of these workshops are to:

- Review the preliminary route alternatives and discuss possible modifications prior to the evaluation; and,
- Review evaluation factors, indicators and data requirements.

If you are unable to attend any of these Public Information Centres but wish to be involved in upcoming workshops, please contact Michael Bricks at (905) 882-4401.

UPCOMING INFORMATION CENTRES

The third set in a series of five sets of Public Information Centres have been arranged for:

MONDAY, MARCH 27, 1995
3:00 p.m. to 8:00 p.m.
QUEENSVILLE COMMUNITY CENTRE
1690 Queensville Blvd.
Queensville, Ontario

WEDNESDAY, MARCH 29, 1995
3:00 p.m. to 8:00 p.m.
UDORA COMMUNITY CENTRE
Regional Road 82
Udora, Ontario

THURSDAY APRIL 6, 1995
3:00 p.m. to 8:00 p.m.
BEAVERTON MEMORIAL ARENA
178 Main Street West
Beaverton, Ontario

TUESDAY, MARCH 28, 1995
3:00 p.m. to 8:00 p.m.
EGYPT COMMUNITY CENTRE
Smith Blvd. and Regional Road 18
Georgina, Ontario

MONDAY, APRIL 3, 1995
3:00 p.m. to 8:00 p.m.
PEPPERLAW LIONS HALL
Peppers Lane
Pepperlaw, Ontario

FOR MORE INFORMATION CONTACT

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Senior Project Manager
Planning Office
Ministry of Transportation
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Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Tel: (905) 882-4401
Fax: (905) 882-4399

From page 27

The Redmen were scheduled to open a York Region baseball centre against Brampton last night.

Home League
Minor Ties
The Lake Factory 10 (James Ostry 2, Alexander Van Pelt, David Highways, Logan Artale 2, Brett Housard, Keith Davis 1 (Cameron McCauley).
Crest 4 (Brett Gaudin 2, Jeff Blackburn, Zachary Bassett, Anthony Douls, David Shumard, Muddy Duck 1 (Andrew Bell).
Amalgam Village Child Care 6 (Matthew Kiny 2, Michele Roth 2, Eurlande Potts 1 (Andrew Eastman).
Crest 10 (Johnnie Gaudin 6, Steven Pott, Matthew Hills, Stephen Anderson, Bryce 3 (Matthew McGill 2).

Minor Series
Playoffs
Rutgers & Ben 8 6 1 1 13
Crest 8 4 2 2 10
Seabays 4 2 2 2 10
Canadian Tire 6 3 3 10
Reggie Cables 2 4 1 7
W.W. Papp 2 3 3 7
Tehup 2 2 2 6
Newmarket Harolds 2 3 3 6
Arctic Vinyl 2 3 3 6
Grand & Toy 2 2 1 6

Last week's results
Seabays 7 (Darryl Burkhardt 4, Craig Steen, Adam Kucharsky, Jimmy Murphy, Reggie Cables 1 (Dorian Perry).
Crest 7 (Chris Lohay 3, Robbie Thorpe, Ryan Hill, Ryan Lohay, Chris Hill, W.W. Papp 7 (Andrew Pashman 6, Jason Bass, Jay Carter).
Canadian Tire 6 (John Cantale 2, Addison Tejada 2, Steven Williams, Alan Jenkins, Michael Bassett, Julie Leroy, Jason Ferguson-SO, Newmarket Harolds 6.
Rutgers & Ben 6 (41st Bridge 2, Justin Smith, Adam Wilson, Matthew McKeown, Grand & Toy 1 (David Smith).
Arctic Vinyl 6 (Brian Binstar 2, Brian Coss, Clayton Dan, Alex Binstar, Toleway Communications 3 (Evan Hwang 2, Andrew Hays).

Major Series
Playoffs
United Hockey 6 6 0 0 12
Arctic Vinyl 6 5 0 1 11
Van 6 3 2 1 7
National Trust 6 2 3 1 6
Jaysco 6 2 3 1 6
Full-Save Marine 6 1 4 1 3
CES Transportation 6 1 4 1 3
All Pro Sports 6 1 1 0 2

Last week's results
Full-Save Marine 4 (Marcus Spillars 2, Dustin Kinn, Justin Curtis, All Pro Sports 1 (Chris Dugdale).
United Hockey 6 (Jesse Hunter 2, Jamie Lumbert, Kyle Allen, Alex Bagley, Steven Humber, Adam Mandryk, CES Transportation 2 (Lori Gaudin, Jordan Artale).
Vets 1 (Robert Clement), Jaysco 1 (Rylee Simpson).
Arctic Vinyl 4 (Chris Tynd 2, Jason Hays 2, National Trust 1 (Josh McCann).

Minor Series
Playoffs
Midway Disposal 4 4 0 2 10
Duran Pott 4 4 0 2 10
Seabays 4 4 2 0 8
Newmarket 6 2 2 2 6
Quality Mail 6 2 4 0 4
Rainbow Promotions 6 2 4 0 4
Potters 6 1 3 2 6
Jagger Vans 6 0 4 2 2

Last week's results
Newmarket 6 3 (Bryan Matheson 2, Quality Mail Peppercorn 1 (Ryan Song).
Duran Pott 3 (Ryan Song, Wayne McGill, Bryan McDonald, Midway Disposal 3 (Tim Hagg, Jordan Gaudin, Jonathan Apple).
Potters Tactic Spectators 3 (John Rodgers, Chris Richardson, Nolan Seard).

Minor Series

Home League
Minor Ties
Hempden Junction 6 4 1 1
Chen Madford 6 4 1 1
Newmarket Ray's 6 3 2 1
Smith, Vito, Emen 6 3 2 1
YC Physiotherapy 6 2 2 2
Seabays 6 1 2 2
Newmarket Harolds 6 1 2 2
Bilford Potters 6 0 6 1

Last week's results
Newmarket Harolds 1 (Kevin Collin, Hempden Junction 1 (Chris Kady).
Van County 6 (Johnnie Gaudin 6, Lior Gaudin 3, Jeff Carter, Peter Moore, Peter Downing, David Hill-SO, Scott Moore 6.
Smith, Williams & Bateson 3 (L. Umanity 2, Josh Mahut, Michele Cur SO, Belmont Potters 6.
Duran Madford 7 (Jason MacDonald, Paul Hamilton 2, Matt Johnson, Newmarket Ray's Children 2 (Pete Glyn, Mike Miller).

Playoffs
Spoke O Motion 6 6 2 0
Potters 7 6 1 1
York Hydro 7 4 2 0
York Hydro 7 4 2 0
Road's Sports Bar 6 3 2 3
Potters 6 3 2 3
State Form-McCann 7 1 3 3
Newmarket 7 2 6 0
York 7 1 4 2
White Rose 7 0 6 1

Last week's results
Print Graphics 3 (Richard, Harolds Cals 2, Daryl, Host Shop 6.
Spoke O Motion 5 (Richard 2, Ric Sports Bar 1 (Brett).
Potters 4 (Derek 2, Potters, Port York Hydro 3 (Adam, Arvin 2).
Host Shop 3 (Brennan 2, Mike York 2 (Pete 2, Seard).
Spoke O Motion 4 (Adam, Margat, Harolds, Newmarket 2 (Barr Jones).
Road's Sports Bar 7 (Alan 2, Sc. Haggard 2, Potters, Potters).
Potters 5 (James 2, Potters, Support 2).
Print Graphics 5 (Harolds 2, York 2), State Form-McCann 2 (Gin Cornell).

EG Minor

Midnight A
Elin Webb highlighted a cover-point tomorrow with three goals and Ryan P. also had a hat trick as East Gwillim doubled Milton 10-4 in the opening 5 of a best-of-seven OHA-GO final on Sunday night at Shonan Arena.
The series resumes tomorrow (8:30 p.m.) in Shonan before shifting to Milton for third and fourth games of the series Thursday and Saturday.

YS Express

Minor Series
Most talented and Ryan Potters called a goal and an assist each as the Express Express started to a 3-1 vic over the Richmond Hill-Harolds 6 Wednesday night to capture the Eyr Tapa-A Hockey League title and as both in this weekend's OHA, the early tournament at Walford.
The Express club captured the six-carries by a 7-1 margin.
San Richmond also scored for the team while Corey Linder shipped six two assists.
A night earlier, the Express received great two-point performance from 100 and Linder in a 5-4 victory over Seabays at Maple.
Seabays had the other YSE goal. In other action, the Express dropped a verdict to the host Richmond Vaughan Kings in Sunday's final March break tournament.

The Era Banner CARRIER OF THE WEEK

Sponsored by



Newmarket & Aurora

RELIABILITY YOU CAN COUNT ON.

Brod is 12 years old and in Grade 7 at Prince Charles Public School. Brod's hobbies are dirt biking, hockey, roller blading and skiing.

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IMPORTANT INFORMATION



Ministry of Transportation

HIGHWAY 404 EXTENSION

YOUR INVITATION

As you are aware the Ministry of Transportation is conducting an Environmental Assessment Study to examine a route for the extension of Highway 404. We invite you to attend the third set of Public Information Centres, the purpose of which is to:

- ◆ Present the Preliminary Route Alternatives (see map on reverse side of this brochure);
- ◆ Present the proposed method for selecting a Preferred Route; and,
- ◆ Sign-up for upcoming workshops.

THE WORKSHOPS

Following this set of Public Information Centres, workshops will be arranged to allow interested individuals another opportunity to participate in the study. The objectives of these workshops are to:

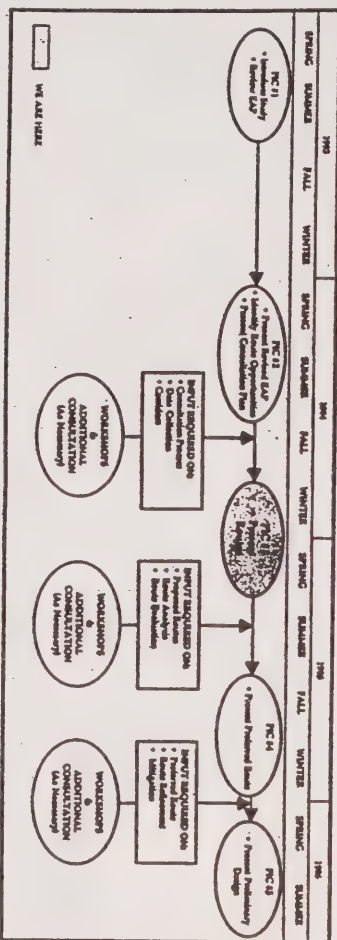
- ◆ Review the Preliminary Route Alternatives and discuss possible modifications prior to the evaluation; and,
- ◆ Review evaluation factors, indicators and data requirements.

If you are unable to attend any of these Public Information Centres but wish to be involved in upcoming workshops please contact Michael Bricks at (905) 882-4401.

In addition to these workshops, groups and individuals are encouraged to contact project team members for additional information. Requests for additional meetings with groups or individuals to discuss issues and concerns are encouraged.

CONSULTATION PLAN

Public Information Centres keep you informed about the project's progress and provide an excellent opportunity for you to participate in the study. We encourage you to attend. The consultation plan (below) indicates opportunities for various other meetings or workshops. If you feel that different input forums would be useful, please let us know.



The third set of Public Information Centres will be held on:

MONDAY, MARCH 27, 1995

3:00 p.m. to 9:00 p.m.

QUEENSVILLE COMMUNITY CENTRE
1590 Queenville Slideway (East of Leslie Street)

TUESDAY, MARCH 28, 1995

3:00 p.m. to 9:00 p.m.

EGYPT COMMUNITY CENTRE
Smith Boulevard and York Regional Road 18

WEDNESDAY, MARCH 29, 1995

3:00 p.m. to 9:00 p.m.

UDORA COMMUNITY CENTRE
York Regional Road 82

MONDAY, APRIL 3, 1995

3:00 p.m. to 9:00 p.m.

PEPPERLAW LIONS HALL
Pepper Lane

THURSDAY, APRIL 6, 1995

3:00 p.m. to 9:00 p.m.

BEAVERTON MEMORIAL ARENA
176 Main Street West

Information and comments obtained during this study will be maintained as a public data base and will be kept on file (names and addresses will be kept confidential).

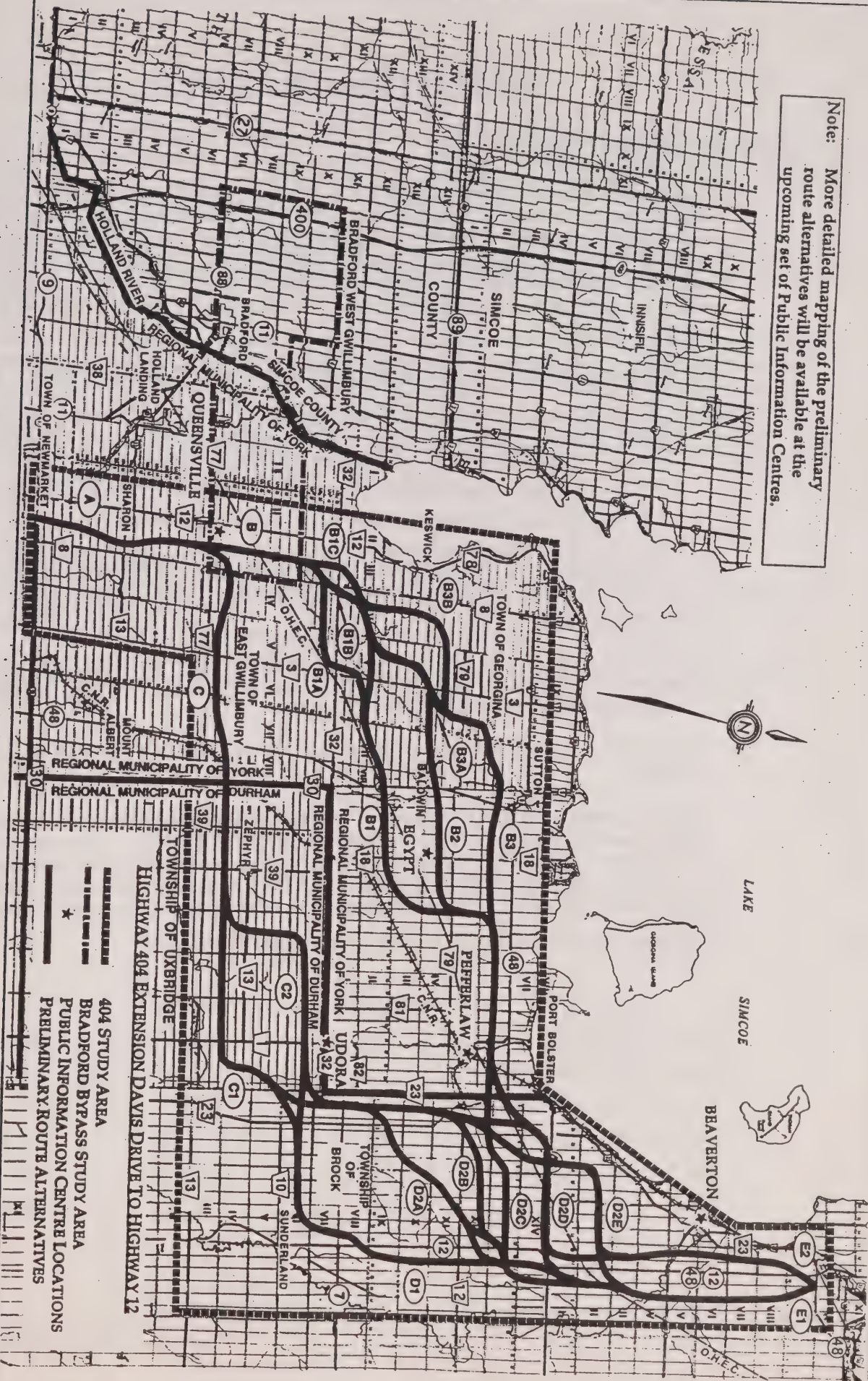
For further information, please contact:

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Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.



SUMMARY OF WORKSHOP #2

1.0 INTRODUCTION

The second series of workshops for the Highway 404 Extension Environmental Assessment Study were held in June/July 1995. The primary purpose of these workshops was to review the route alternatives presented at the previous public information centre to determine if any refinements should be made prior to evaluation and to review the proposed evaluation criteria to identify if any measures should be added prior to evaluation. A secondary purpose of these workshops was to further inform area residents about the study and study process.

The following measures were taken to inform people about these workshops:

- Ontario Government Notices were placed in the Toronto Star, Aurora Era, Newmarket Banner, Georgina Advocate, Beaverton Express and Stouffville Uxbridge Tribune notifying interested individuals to attend third series of Public Information Centres in order to sign-up for the workshops, or contact the Project Team directly to sign-up for the workshops;
- Brochures were distributed to all study area residents (approx. 25,000) requesting interested individuals to attend the third series of Public Information Centres in order to sign-up for the workshops, or contact the Project Team directly to sign-up for the workshops; and
- The workshop concept was explained on display boards, and at a staffed sign-up table at the third series of Public Information Centres. Project Team members encouraged attendees to sign-up for these workshops

At the Public Information Centres, a total of 393 people expressed interest in attending the workshops.

To accommodate the large number of people that signed up for the workshops, five workshops were arranged at various locations in the Study Area. Interested parties were sent an invitation letter and an agenda for the workshop closest to their residence. A note was added to each letter informing people that if they could not attend the workshop they should contact the Project Team to inquire about other workshop dates and locations.

The following chart summarizes participation in these workshops.

DATE	INVITED	ATTENDED	%
June 22, 1995 (Udora)	103	39	38 %
June 26, 1995 (Queensville)	67	19	28 %
June 27, 1995 (Pefferlaw)	52	14	27 %
June 29, 1995 (Egypt)	84	27	32 %
July 5, 1995 (Beaverton)	84	40	47 %
Total	393	139	35 %

2.0 RESULTS

The purpose of these workshops was to review the route alternatives presented at the previous public information centre to determine if any refinements should be made prior to evaluation and to review the proposed evaluation criteria to identify if any measures should be added prior to evaluation.

Participants were divided into two groups. Each group spent approximately 1 hour with Project Team members discussing possible route refinements and reviewing evaluation criteria.

The route refinement segment began with a brief review of the corridor opportunities generated for the project. The route design objectives were also reviewed, and the rationale for the alignment of the route alternatives were discussed. Route refinements developed as a result of the third set of Public Information Centres were also reviewed. Through these discussions, attendees were provided an opportunity to understand how the route alternatives were originally determined, and to suggest improvements to these alternatives so that overall impacts were reduced.

From the five workshop sessions, three route refinements were suggested:

- a) Route alternative B1A between Woodbine Avenue and Carly Road;
- b) Route alternative B2 between Egypt Sideroad (York Regional Road 18) and Stoney Batter Road; and,
- c) Route alternative E1, between 4th Line and 7th Line (Brock Township).

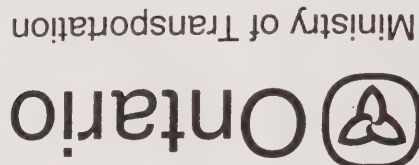
The following chart outlines how the issue raised during the evaluation criteria review will be addressed.

ISSUES	RESPONSE
<p>TRANSPORTATION</p> <p>Traffic Operations</p> <ul style="list-style-type: none"> • Highway safety as a result of conflicts with wildlife movements • Highway should be sited close to users 	<ul style="list-style-type: none"> • Measured by indicator 2.2 b) encroachment on or severance of greenway and open space linkages (wildlife travel corridors). • The study limits were set based on providing adequate service to users and ability of road network to serve the highway. Some alternatives will require additional road upgrades this is measured by indicators 1.2 a) effect on traffic volumes on parallel/crossing roads and 1.2 b) effect on traffic operations on parallel/crossing roads.
<p>Network Compatibility</p> <ul style="list-style-type: none"> • Impact to the local roads as a result of vehicles accessing the highway • Impact on municipal tax base as a result of local road improvement • Effect on safety of connecting roads • Appropriateness of connecting road upgrades (i.e., environmental effects). 	<ul style="list-style-type: none"> • Measured by indicators 1.2 a) effect on traffic volumes on parallel/crossing roads and 1.2 b) effect on traffic operations on parallel/crossing roads. • There is some trade-off. Long distance trips will re-route to the new highway from municipal roads, saving maintenance and upgrading costs. • On the whole, fewer long distance future trips are expected on regional and local roads as long distance trips will use the new highway. Interchanges are only considered at major regional roads or provincial highways. Since these roads are already major facilities it is assumed that increases in traffic can be accommodated without experiencing major decreases in safety. • This study will identify future transportation problems on the existing road network as a result of the highway.
<p>Cost</p> <ul style="list-style-type: none"> • Will the impacts of more trucks be factored into maintenance costs 	<ul style="list-style-type: none"> • Trucks will use the new facility, reducing maintenance costs on regional roads. The new facility will be designed to accommodate a high volume of trucks. Maintenance costs are based on typical costs per km. These typical costs include both cars and trucks.

ISSUES	RESPONSE
<p>NATURAL ENVIRONMENT</p> <ul style="list-style-type: none"> • Concerned that the level of detail is not sufficient to assess natural environment impacts. • Air quality 	<ul style="list-style-type: none"> • In consultation with External Agencies, an appropriate level of detail was developed for each stage of the study. Refinements were made in consultation with stakeholders. • Recent studies completed by the Ministry of Transportation (for more heavily traveled facilities within urban areas) indicate that changes to air quality generally fall within provincial guidelines. Impacts to air quality will not be incorporated in the evaluation of route alternatives for this study because of the open rural character and lower traffic volumes.
<p>Fisheries and Aquatic Habitat</p> <ul style="list-style-type: none"> • Concerned about impact to Lake Simcoe. 	<ul style="list-style-type: none"> • Storm water quality management will be addressed for the recommended alternative.
<p>Wildlife</p> <ul style="list-style-type: none"> • Noise impacts to wildlife 	<ul style="list-style-type: none"> • Overall sensitivity of wildlife to highway development impacts is considered within indicator 2.2 c) encroachment or severance of significant wildlife habitat.
<p>Vegetation</p> <ul style="list-style-type: none"> • Upland habitat needs more emphasis • Salt spray impacts to vegetation • Effect on vegetation as a result of reduced air quality 	<ul style="list-style-type: none"> • Comment noted. Additional field work for upland habitat has been conducted to ensure a uniform database. • The sensitivity of vegetation types to highway development will be considered through criteria 2.4 Vegetation. MTO is researching and testing alternative de-icing materials and methods. • The effect of air quality on vegetation is expected to be minimal, given the open rural character of the landscape.

ISSUES	RESPONSE
<p>Groundwater</p> <ul style="list-style-type: none"> • A more detailed investigation of ground water effects is required • Will the effect of the compaction of earth, which could affect ground and surface water, be assessed. • Concerned with the impact of stormwater run-off on ground and surfacewater • Effect on floodplain • Effect on well water quality and quantity 	<ul style="list-style-type: none"> • Groundwater impacts used to choose between alternatives have been included as indicators 2.5 a) and 2.5 b). Investigations on the impact to specific wells will be addressed during detail design (a few years prior to construction). • Where routes are underlain by permeable soils there is a greater potential for effects to groundwater. This is considered within indicator 2.5 a) ground water recharge underlain by permeable soil. • Storm water quality management plan will be addressed for the recommended alternative. • The recommended alternative will be designed to produce no net effect on the floodplain. • Measured through criteria 2.5 Groundwater. Investigations on the impact to specific wells will be addressed during detail design (a few years prior to construction).
<p>SOCIO-ECONOMIC ENVIRONMENT</p> <p>Community Effects</p> <ul style="list-style-type: none"> • Concerned about increased development around interchanges • Change in quality of recreational experience (ie canoeing, cross-country skiing etc.,) • Property value impacts for properties in close proximity to the highway • Highway will effect long term development patterns not accounted for in Official Plans (i.e. greater than 20 years) 	<ul style="list-style-type: none"> • This is a planning issue which is handled at the municipal level in accordance with official plans. • This is considered within indicator 3.1 c) displacement of institutional and recreational features and 3.1 d) disruption of institutional and recreational features. • Because highway proximity is only one factor that may affect property values, this study will not address the issues of property values either increasing or decreasing. However, indirect property impacts will be measured under noise, visual intrusion and community effects (i.e. cohesion, stability and character). • The Ministry of Transportation is unable to speculate on potential impacts to development outside of Official Plan time frames.

ISSUES	RESPONSE
<p>Community Effects (con't)</p> <ul style="list-style-type: none"> • Effect on school bus routes (i.e. increased travel time) • Effect on schools (noise, air pollution, safety) • Effect on cemeteries • Effects on community boundaries • Should be measuring quality of life (effect on rural community) • Cost of extra emergency services that will be required because of the highway • Beaverton community boundary is bigger than shown in Official Plan 	<ul style="list-style-type: none"> • Comment noted and indicator added. • Potential mitigation will be investigated for the preferred route. The effect on air quality is expected to be minimal, given the open rural character of the landscape. • Cemeteries avoided during route generation. • Measured as part of effect on community character and cohesion. • Measured as part of effect on community cohesion, effect on community stability, effect on community character. • Accident rates on a freeway are 1/7 accident rates on regional roads. Therefore the highway will result in fewer accidents, and thus lower costs. • Comment noted (not an indicator issue).
<p>Agricultural</p> <ul style="list-style-type: none"> • Salt spray impacts to agricultural operations • Impact on local agricultural economy should also include loss of revenues for ancillary businesses (ie. feed shops, co-ops etc.,) • Agriculture operations should be assessed on future potential (highest and best use) • Must consider linked operations 	<ul style="list-style-type: none"> • Will be examined as a component of the impact to the future viability to existing operations. MTO is researching and testing alternative de-icing materials and methods. • Potential extent can be derived from displacement of farm units. • Indicator added which assess soil classification. • Linked operations are considered.
<p>Commercial/Industrial</p> <ul style="list-style-type: none"> • Should be measuring business bypass effects • Tourism revenue as a result of impacts to Lake Simcoe 	<ul style="list-style-type: none"> • While a highway through the study area will benefit the regional economy, the MTO currently does not assess the potential effect of business bypass. • No impact is anticipated as highway impacts to Lake Simcoe will be minimized through the storm water quality management.



HIGHWAY 404 EXTENSION UPDATE OF ROUTES

INDICATES ROUTE REVISIONS THAT MAY AFFECT YOU!

IMPORTANT INFORMATION ROUTE REVISIONS INSIDE! DO THEY AFFECT YOU?

In March of 1995, route alternatives were presented to the public at a set of Public Information Centres. The Information Centres were held to obtain comments on the proposed routes and to discuss possible modifications prior to selecting a preferred route. A set of workshops was also held in June 1995 to further discuss route issues.

As a result of this consultation, a total of 13 refinements were suggested to the MTO, which the study team investigated. Based on route design objectives (which considered engineering, social, natural environment, economic environment and cultural environment factors), the overall impacts associated with these refinements were compared to the impacts associated with the original alignment. Route refinements that produced significant decreases in impacts have been carried forward to the evaluation and the original alignment has been dropped from further consideration.

The map on the reverse side of this brochure outlines the modifications considered and the routes that will be carried forward to the evaluation stage. You may be affected by the revisions.

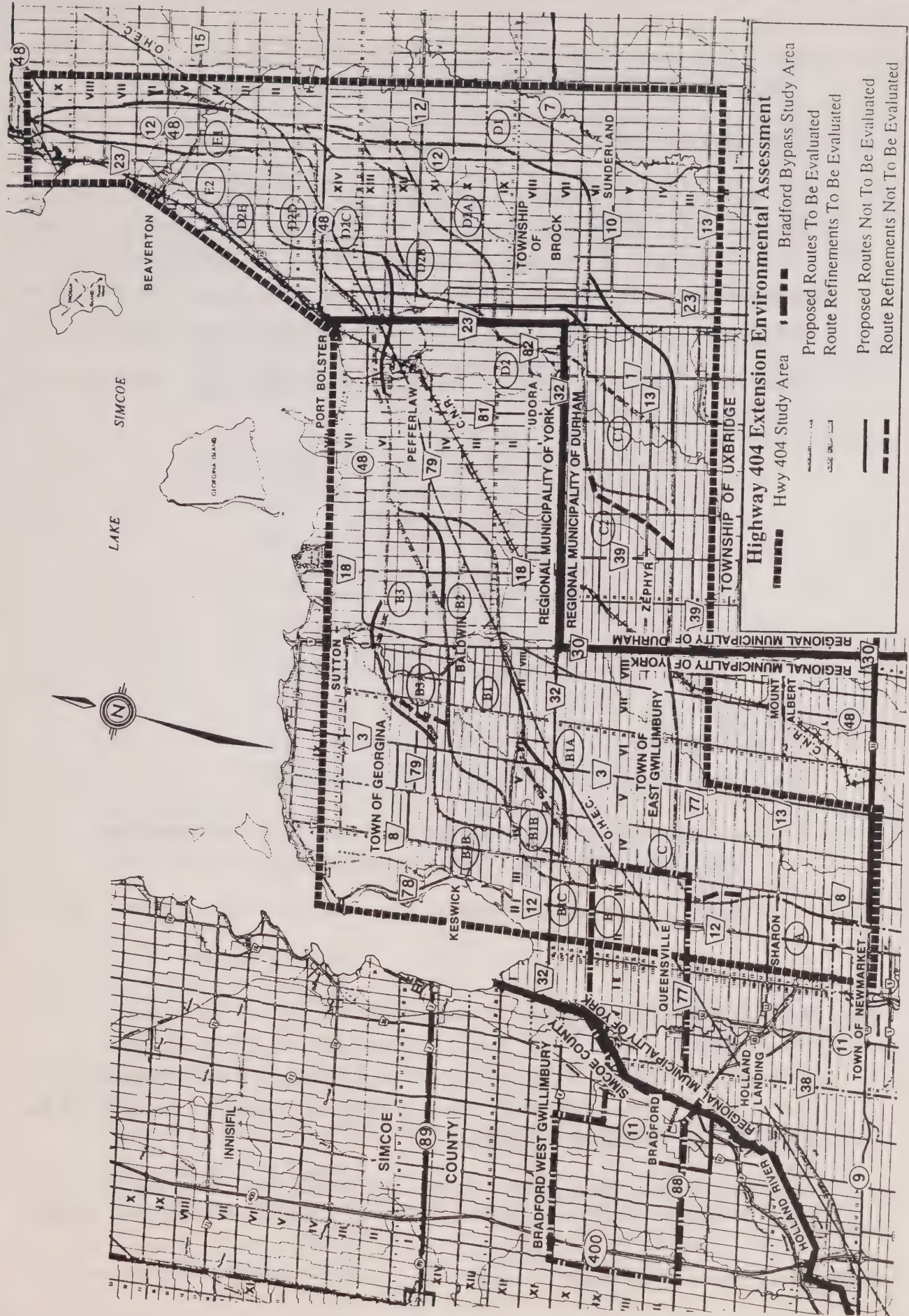
The analysis is currently underway. Due to the large number of route refinements under consideration, the presentation of the preferred alternative will be delayed. We anticipate that the next set of Public Information Centres will be held in Spring 1996. Dates for these Information Centres will be published once they have been finalized.

If you have questions specifically regarding the route alternatives please contact:

Mr. Len Kozachuk, P.Eng.
Consultant Project Engineer
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9
Tel: (905) 882-4401
Fax: (905) 882-4399

If you have other questions regarding this study please contact:

Mr. Steve Jacobs, P.Eng. Senior Project Manager Planning Office Ministry of Transportation 1201 Wilson Avenue 3rd Floor, Atrium Tower Downsview, Ontario M3M 1J8 Tel: (416) 235-5522 Fax: (416) 235-4940 e-mail: jacobss2@epo.gov.on.ca	or	Mr. Chris Ricketts, P.Eng. Consultant Project Manager Cole, Sherman & Associates Ltd. 75 Commerce Valley Drive East Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399
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Highway 404 Extension Environmental Assessment

- Hwy 404 Study Area
- Bradford Bypass Study Area
- Proposed Routes To Be Evaluated
- Route Refinements To Be Evaluated
- Proposed Routes Not To Be Evaluated
- Route Refinements Not To Be Evaluated

SUMMARY OF PUBLIC CONSULTATION SESSION #4

1.0 INTRODUCTION

The fourth set of Public Consultation Sessions (formerly PICs) of the Environmental Assessment Study for the Highway 404 Extension - Davis Drive to Highway 12 was held in November 1996. The Consultation Sessions provided the public with an opportunity to review and discuss the evaluation and selection of a preferred route with representatives of the Project Team.

Three Consultation Sessions were held in the study area. The dates and locations were as follows:

Tuesday, November 12, 1996
Pefferlaw Lions Hall

Monday, November 18, 1996
Egypt Community Centre

Tuesday, November 19, 1996
East Gwillimbury Municipal Offices

2.0 PURPOSE

The purpose of this set of consultation sessions was to:

1. Present and obtain input on the evaluation of route alternatives.
2. Present and obtain input on the Preferred Route.
3. Sign-up for upcoming workshops.

3.0 PUBLIC NOTIFICATION

Prior to this series of Public Consultation Sessions, the following measures were carried out to notify study area residents and interested members of the public of the Consultation Sessions:

1. Brochures and project update summaries were distributed to all municipal clerks for municipal council information and public review.

2. An Ontario Government Notice was placed in each of the following newspapers:

Toronto Star	Saturday, November 2, 1996
Stouffville Uxbridge Tribune	Saturday, November 2, 1996
The Era-Banner	Sunday, November 3, 1996
Georgina Advocate	Monday, November 4, 1996
Beaverton Express	Tuesday, November 5, 1996
3. Registered letters were sent to all potentially affected landowners.
4. Approximately 25,500 brochures detailing the project were sent through general mail to area residents inviting them to attend the Consultation Sessions.
5. Letters and brochures were directly sent to those people on the Project Team's mailing list. This mailing list included:
 - MPP's
 - Cottage and Ratepayer Groups.
 - Chambers of Commerce.
 - Environmental Groups.
 - Heritage Groups.
 - Agricultural Groups.
 - Other interested individuals that requested to be placed on the mailing list (approximately 750 people).

In addition local newspapers published numerous articles covering council presentations providing area residents with a project update and in some instances, dates and locations of Public Consultation Sessions.

4.0 PRE-PCS MEETINGS

i) *Municipal Team*

Prior to the Public Consultation Sessions, information packages were sent to staff of all the municipalities in the study area and council meetings were arranged.

The dates of Council Presentations were (see Appendix C for Minutes):

- Region of Durham October 15, 1996
- Region of York October 16, 1996

- Town of Georgina October 21, 1996
- Town of East Gwillimbury October 21, 1996
- Township of Brock November 4, 1996

The Town of Newmarket and Township of Uxbridge declined a council presentation.

ii) External Team

Prior to the Public Consultation Sessions, meetings were held with key review agencies. Meetings held included:

- Ministry of Natural Resources October 25, 1996
- Ministry of Agriculture, Food and Rural Affairs October 30, 1996
- Lake Simcoe Region Conservation Authority November 1, 1996

5.0 MATERIAL DISPLAYED

The following display material was presented:

- Information boards introducing the study and the Environmental Assessment Process
- Summary of the third round of public consultation
- Route Refinement Process
- Route Analysis and Evaluation
- Technically Preferred Route
- What's next.

6.0 ATTENDANCE/COMMENTS

The following chart illustrates the number of visitors who chose to register their attendance for this series of Public Consultation Session:

The Public Consultation Sessions provided the opportunity for interested individuals to sign-up for workshops. A total of 215 individuals signed-up for the various workshops.

In addition to verbal comments, Project Team members encouraged visitors to express, in writing, all comments and concerns they had regarding the information presented. The chart below documents the number of comment

sheets received.

DATE	ATTENDANCE	COMMENT SHEETS RECEIVED	% OF PEOPLE WHO FILLED IN A COMMENT SHEET
Nov. 12, 1996 (Pefferlaw)	226	41	18
Nov. 18, 1996 (Egypt)	221	14	7
Nov. 19, 1996 (Sharon)	153	30	20
Sheets mailed in	-	1	-
Total	600	87	14

The most common comment received was a request for additional information. Primarily people were requesting more detailed mapping of the technically preferred route. In addition people were also seeking clarification on proposed interchange locations and road closings.

The second most common comment supported the selection of the technically preferred route. In general these respondents concurred with the existence of problems today and realized that conditions will worsen in the future. The majority of these respondents also identified the importance of constructing this facility as soon as possible.

The third most common comment identified concerns associated with the preferred route. These concerns ranged from direct impacts (property directly affected and natural environment impacts) to indirect impacts (noise and property value). The majority of these comments were specific to the impacts associated with the route crossing in the Pefferlaw area. Some of these respondents disputed the need for the undertaking.

The fourth series of Public Consultation Sessions will be held on:

TUESDAY NOVEMBER 12, 1996
3:00 p.m. to 9:00 p.m.
PEPPERLAW LIONS HALL
Peters Lane

MONDAY NOVEMBER 18, 1996
3:00 p.m. to 9:00 p.m.
EGYPT COMMUNITY CENTRE
Smith Boulevard and York Regional Road 18

TUESDAY NOVEMBER 19, 1996*
3:00 p.m. to 9:00 p.m.
EAST GWILLIMBURY MUNICIPAL OFFICES
Holland Landing Room
19000 Leslie Street (at Mount Albert Sideroad)

Information and comments obtained during this study will be maintained as a public data base and will be kept on file (names and addresses will be kept confidential).

For further information, please contact:

Mr. Steve Jacobs, P.Eng. Senior Project Manager Planning Office Ministry of Transportation 1201 Wilson Avenue 3rd Floor, Atrium Tower Downsview, Ontario M3M 1J8 Tel: (416) 235-5522 Fax: (416) 235-4940 e-mail: jacobss@gov.on.ca	Mr. Chris Ricketts, P.Eng. Consultant Project Manager Cole, Sherman & Associates Ltd. 75 Commerce Valley Drive East Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399 e-mail: cericke0@wcc.com
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* Joint Public Consultation Session with the Bradford Bypass Study. An additional Public Consultation Session for the Bradford Bypass Study is scheduled for November 14, 1996 in Bradford.

Attention

You are encouraged to attend a Public Consultation Session, held to present the **Technically Preferred Route** for the extension of Highway 404 from Davis Drive to Highway 12. You are also invited to review the results of the evaluation and provide your comments on the recommendations.

Analysis and Evaluation of Alternative Routes

The last round of public review focused on the generation of alternative routes. Through the review process, a number of refinements were made.

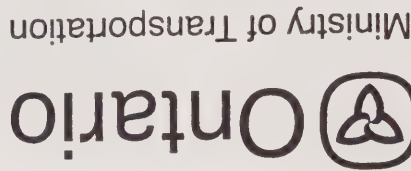
The refined set of route alternatives have been analyzed to determine their impact on the natural, social, economic and cultural environments, as well as their benefit to the transportation system. The routes were compared and evaluated to determine a technically preferred route. Input obtained from sources such as other ministries, agencies, and members of the public was also used during this process.

What Happens Next?

Information received at these Public Consultation Sessions and at a subsequent workshop will be considered prior to finalizing the preferred route. The workshop (scheduled for early 1997) will provide an opportunity to review the preferred route in more detail. You may sign-up for workshops at the Public Consultation Sessions or by calling Michael Bricks at (905) 882-4401.

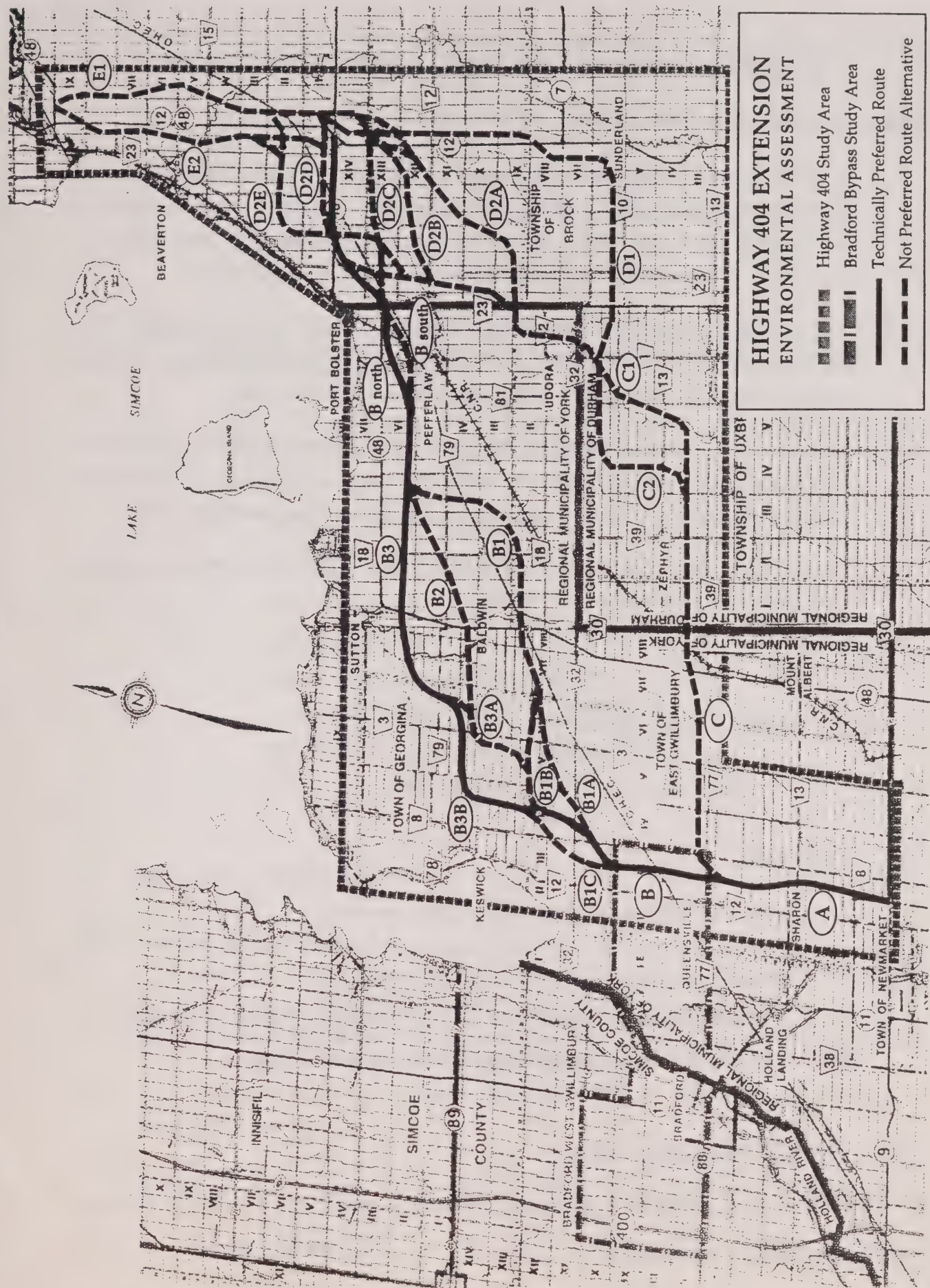
An Environmental Assessment Report will be prepared and further consultation will take place prior to submission of the report to the Ministry of Environment and Energy. The Minister of Environment and Energy will then initiate a formal process to decide whether to approve the undertaking. Further public notification will occur at that time.

IMPORTANT INFORMATION



HIGHWAY 404 EXTENSION

Notice of Public Consultation Session # 4



SUMMARY OF PUBLIC CONSULTATION SESSION #5

1.0 INTRODUCTION

The fifth set of Public Consultation Sessions of the Environmental Assessment Study for the Highway 404 Extension - Davis Drive to Highway 12 was held in June 1997. This set of Consultation Sessions was organized as a combined drop-in centre and working meeting.

The drop-in centre component of the Session allowed members of the public the opportunity to review engineering drawings of the technically preferred route and discuss the project with project team representatives.

The working meeting component provided members of the public the opportunity to meet individually with the highway designers and review potential impacts to property and discuss possible minor modifications.

Two Consultation Sessions were held in the study area. The dates and locations were as follows:

Tuesday, June 3, 1997
Egypt Community Centre

Thursday, June 5, 1997
Pefferlaw Lions Hall

2.0 PURPOSE

The purpose of this set of consultation sessions was to:

1. Present and obtain input on the Concept Design
2. Review property impacts and discuss possible minor modifications.
3. Receive written comments from those in attendance.

3.0 PUBLIC NOTIFICATION

Prior to this series of Public Consultation Sessions, the following measures

were carried out to notify study area residents and interested members of the public of the Consultation Sessions:

1. An Ontario Government Notice was placed in each of the following newspapers:

Stouffville Uxbridge Tribune	Saturday May 23, 1997
The Era-Banner	Sunday May 24, 1997
Georgina Advocate	Monday May 25, 1997
Beaverton Express	Tuesday May 27, 1997
2. Approximately 25,500 brochures detailing the project were sent through general mail to area residents inviting them to attend the Consultation Sessions.
3. Letters and brochures were directly sent to those people on the Project Team's mailing list. This mailing list included:
 - MPP's
 - Cottage and Ratepayer Groups.
 - Chambers of Commerce.
 - Environmental Groups.
 - Heritage Groups.
 - Agricultural Groups.
 - Other interested individuals that requested to be placed on the mailing list (approximately 750 people).
4. Letters were sent to all potentially affected landowners

4.0 MATERIAL DISPLAYED

The following display material was presented:

- Information Boards outlining the purpose of the meeting
- 1:10,000 Air Photo Map outline the Technically Preferred Route and all the other alternatives previously considered
- 1:5,000 drawing packages outlining the Technically Preferred Route
- What's next.

At the meeting people were provided with the opportunity to review the

details of the Technically Preferred Route and discuss the project one-on-one with the Project Team. Affected property owners were encouraged to meet with the Highway Designers. These meetings provided affected property owners with the opportunity to discuss the impacts of the route and possible minor modifications. MTO Property Staff was also on hand at these meeting to discuss the process for acquiring property.

5.0 ATTENDANCE/COMMENTS

The following chart illustrates the number of visitors who chose to register their attendance for this series of Public Consultation Sessions:

In addition to verbal comments, Project Team members encouraged visitors to express, in writing, all comments and concerns they had regarding the information presented. The chart below documents the number of comment sheets received.

DATE	ATTENDANCE	COMMENT SHEETS RECEIVED	% OF PEOPLE WHO FILLED IN A COMMENT SHEET
June 3, 1997 (Egypt)	118	15	13
June 5, 1997 (Pefferlaw)	117	23	20
Mail-ins		1	
Total	235	39	17

The most common comment received was a request for additional information. Primarily people were requesting more detailed mapping of the technically preferred route for their personal reference.

The second most common comment supported the selection of the technically preferred route. In general these respondents concurred with the existence of problems today and realized that conditions will worsen in the future. The majority of these respondents also identified the importance of constructing this facility as soon as possible.

The third most common comment identified concerns associated with the preferred route. These concerns ranged from direct impacts (property directly affected and natural environment impacts) to indirect impacts (noise and

property value). The majority of these comments were specific to the impacts associated with the route crossing in the Pepperlaw area. Some of these respondents disputed the need for the undertaking.

What Happens Next?

It is anticipated that the final Environmental Assessment Report will be submitted to the Ministry of Environment and Energy in the Fall of 1997. The Minister of Environment and Energy will then initiate a formal process to decide whether to approve the undertaking. Further public notification will occur at that time.

Dates and Locations

The fifth series of Public Consultation Sessions will be held on:

TUESDAY JUNE 3, 1997
1:00 p.m. to 9:00 p.m.

EGYPT COMMUNITY CENTRE
Smith Boulevard and York Regional Road 18

THURSDAY JUNE 5, 1997
1:00 p.m. to 9:00 p.m.

PEFFERLAW LIONS HALL
Peters Lane

Information and comments obtained during this study will be maintained as a public data base and will be kept on file (names and addresses will be kept confidential).

For further information, please contact:

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Office

Ministry of Transportation
1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8

Tel: (416) 235-5522
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Mr. Len Kozachuk, P.Eng.
Consultant Project Engineer
Cole, Sherman &
Associates Ltd.

75 Commerce Valley
Drive East
Thornhill, Ontario
L3T 7N9

Tel: (905) 882-4401
Fax: (905) 882-4399
e-mail: lvkozac0@wcc.com

Attention

You are encouraged to attend the final set of Public Consultation Sessions for the Highway 404 Extension, from Davis Drive to Highway 12, Route Location and Environmental Assessment Study. Since our last series of Public Consultation Sessions (November 1996), refinements have been made to the preferred alternative. This is your opportunity to review and comment on these refinements. Background information is still available in your local libraries.

Format

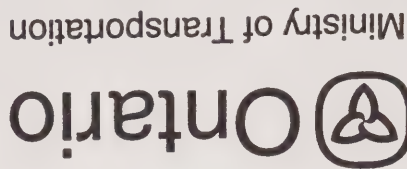
This set of Consultation Sessions has been organized as a combined drop-in centre and working meeting.

The drop-in centre component of the Session will allow you the opportunity to review engineering drawings of the technically preferred route and discuss the project with project team representatives.

The working meeting component will provide you the opportunity to meet individually with our highway designers and review potential impacts to your property and discuss possible minor modifications. For the best service, we encourage you to attend during off-peak hours if possible (peak hours tend to be between the hours of 6:30 p.m. and 9:00 p.m.).

Information received at these Public Consultation Sessions will be considered prior to finalizing the preferred route.

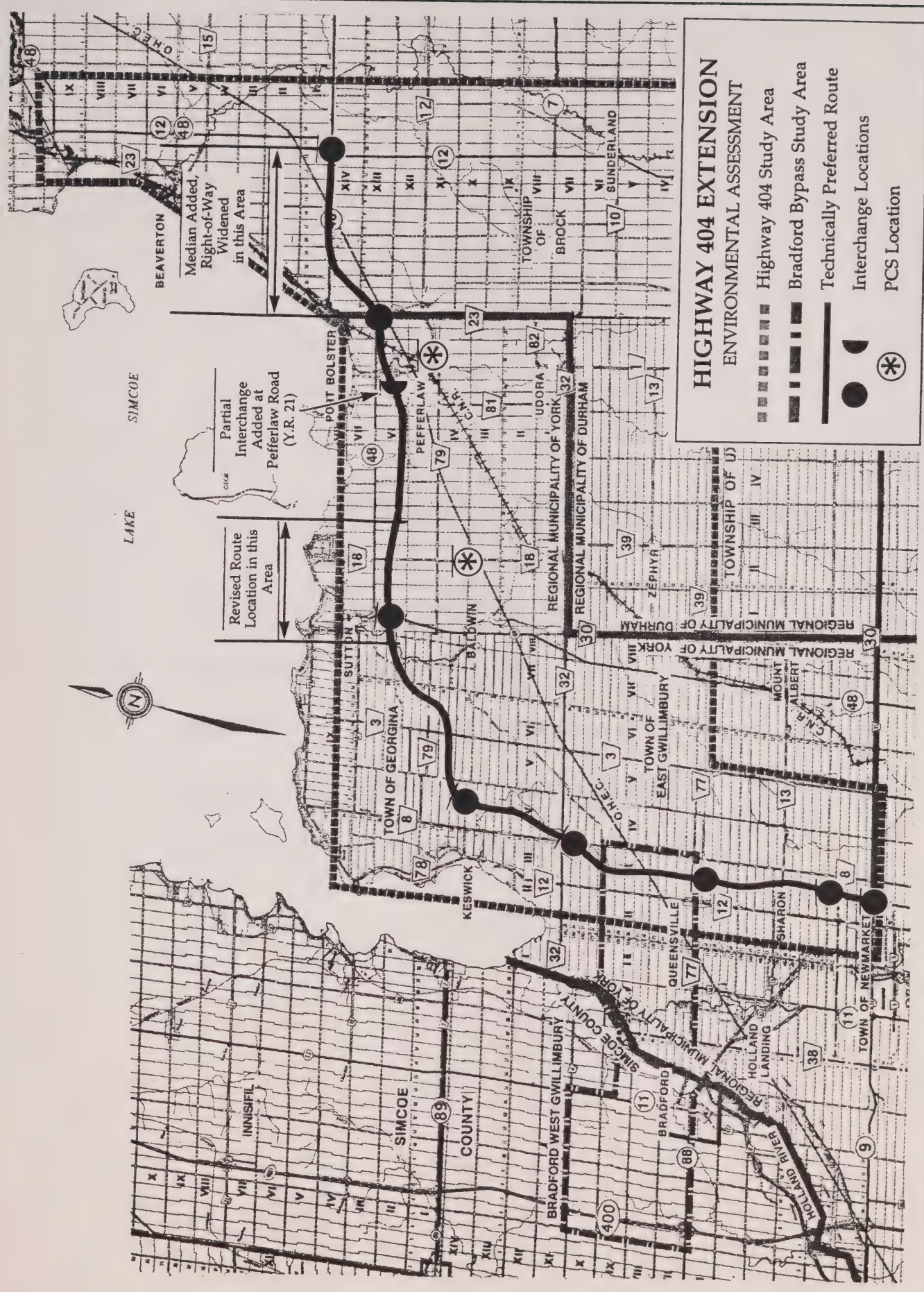
IMPORTANT INFORMATION



HIGHWAY 404 EXTENSION Notice of Public Consultation Session #5



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APPENDIX 6 ROUTE EVALUATION

Appendix 6.A	Guiding Principles
Appendix 6.B	Route Analysis
Appendix 6.C	Evaluation Discussion
Appendix 6.D	Weighting / Scoring Method
Appendix 6.E	Twinning Highway 48 Assessment

APPENDIX 6.A GUIDING PRINCIPLES

**HIGHWAY 404 EXTENSION EA
FACTOR SIGNIFICANCE AND WEIGHTING**

FACTOR	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO STUDY AREA	WEIGHT
1. TRANSPORTATION	The study area limit and design standards used for the route alternatives ensure that any of the proposed routes will serve the study area adequately. Traffic operations and network compatibility will vary, depending on the siting of the facility. Transportation was therefore considered of moderate to high importance.	Moderate to High Importance	20
2 NATURAL ENVIRONMENT	At the corridor generation stage, the most sensitive natural environment areas (e.g. large contiguous provincially significant wetland areas) were identified and excluded from further consideration for locating route alternatives. The natural environment within the corridors was considered of equal significance to the social and economic environments.	High Importance	25
3 SOCIAL ENVIRONMENT	At the corridor generation stage, the most sensitive social environment areas (e.g. areas of concentrated development) were identified and excluded from further consideration for locating route alternatives. The social environment within the corridors was considered of equal significance to the natural and economic environments.	High Importance	25
4 ECONOMIC ENVIRONMENT	At the route generation stage, impacts to agricultural areas were reduced by following property lines as much as possible. The economic environment within the corridors was considered of equal significance to the natural and social environments.	High Importance	25
5 CULTURAL ENVIRONMENT	At the route generation stage, impacts to the cultural environment were reduced by avoiding the most sensitive known cultural environment feature (e.g. historical settlements, cemeteries and known archaeological sites). Many of the remaining direct impacts to the cultural environment are also accounted for under the social economic environment factors (e.g. agricultural impacts and commercial/industrial impacts). Giving high importance to the cultural and social environments, therefore, would unfairly skew the impacts towards the social environment. To avoid overemphasizing social impacts, the cultural environment was considered of low importance to the study area in comparison with the other factors.	Low Importance	5
TOTAL			100

**HIGHWAY 404 EXTENSION EA
REVISED TRANSPORTATION EVALUATION CRITERIA**

Page 1

CRITERION	RATIONALE	RELATIVE IMPORTANCE TO FACTOR	WEIGHT
<u>1. Transportation</u>			
1.1 Traffic Operations	A major objective of the undertaking is to improve operations on the existing road network by providing a controlled access facility for freeway-eligible trips. Traffic Operations is the criterion which measures the effectiveness of each alternative of maximising this objective. This criterion was therefore considered of high importance when assessing transportation impacts.	High Importance	40
1.2 Network Compatibility	Compatibility with the future road network and the ability to upgrade to meet future needs reflects the impacts of a freeway on the local road network and was considered of high importance.	High Importance	40
1.3 Cost	Long- and short-term costs were considered of low to moderate importance when assessing transportation impacts because operations and network compatibility are of greater importance to the day-to-day functioning of the highway.	Low to Moderate Importance	20

INDICATOR	RATIONALE	RELATIVE IMPORTANCE TO CRITERION
<u>1.1 Traffic Operations</u>		
c) Potential slow moving vehicles	Slow moving vehicles (i.e. trucks on long grades) reduce operating efficiency of a highway. Areas of severely rolling terrain are more likely to result in long grades. Slow moving vehicles, however, are transient impacts which will occur only under certain conditions (i.e. when a truck is on the grade). This indicator, therefore, was considered of low importance when assessing the impacts to traffic operations.	Low Importance
e) Design hour volume (forecast)	The forecast design hour volume (DHV) is a measure of the amount of traffic projected to be using the new highway during peak travel periods (i.e. a.m. and p.m. rush hours). One objective of the new highway is to serve freeway-eligible traffic, thereby reducing the volumes of such traffic on the local road network. A measure of the effectiveness of this objective is to compare the DHV for the route alternatives. Those alternatives with a higher DHV are more effective in serving the long-distance traffic and reducing impacts to the local road network. This indicator, therefore, was considered of high importance when assessing the impacts to traffic operations.	High Importance
r) Climatic conditions	Climatic conditions considered most likely to impact on traffic operations were drifting snow and icing/fogging on roadway structures. Such impacts will occur only under certain conditions and may be readily mitigated. This indicator, therefore, was considered of low importance when assessing the impacts to traffic operations.	Low Importance
t) Energy usage by a vehicle on alternative	Energy usage expresses efficiency of traffic movement on the road network in terms of fuel consumption. The measurement of this indicator introduces assumptions pertaining to average fuel consumption rates. This indicator, therefore, was considered of moderate to high importance when assessing the impacts to traffic operations.	Moderate to High Importance

**HIGHWAY 404 EXTENSION EA
REVISED TRANSPORTATION EVALUATION CRITERIA**

Page 2

INDICATOR	RATIONALE	RELATIVE IMPORTANCE CRITERION
<u>1.2 Network Compatibility</u>		
a) Effect on traffic volumes on parallel/crossing roads	Measures degree of change in traffic patterns due to location of new highway, interchanges and road crossings and closings. Since the impact on operations associated with the change in traffic volume is not addressed, this indicator was considered of moderate importance when assessing network compatibility.	Moderate Importance
b) Effect on traffic operations on parallel/crossing roads	Assessment of changes in traffic operations on local road network due to the location of the route alternative, interchanges, road crossing and closings. In addition to volume changes, this indicator considers capacity of roads and intersections in the local network, and was therefore considered of high importance when assessing network compatibility.	High Importance
c) Consistency of design/operation	Assessment of consistency of highway design in comparison with design standards (e.g. existing Highway 404 south of Davis Drive). Although route alternatives may vary from desirable standards, all route alternatives will meet or exceed minimum design standards for controlled access freeways. This indicator, therefore, was considered of low importance when assessing network compatibility.	Low Importance
g) Length of construction period	Estimated minimum duration of construction of route. Once construction of the entire route alternative is completed, the road network will realize the full benefit of the new highway. Construction timetables are subject to fiscal and physical limitations and may vary significantly from the minimum time estimated. This indicator, therefore, was considered of low importance when assessing network compatibility.	Low Importance
h) Ability to stage implementation of the undertaking	Assessment of ability to construct sections of the proposed highway which will function effectively with termini that will not result in significant negative impacts to the road network. This indicator measures the ability of a route to provide incremental benefits to the network as stages are opened during construction. As noted previously, the interim stages may serve the network for extended periods of time. This indicator, therefore, was considered of moderate importance when assessing network compatibility.	Moderate Importance
i) Ability to upgrade undertaking as warranted by future needs	Assessment of ability to improve facility to address traffic needs without creating significant impacts to adjacent properties. This indicator measures flexibility of route alternative to address long-term (30 years +) traffic needs. Such flexibility is inherently provided for with the 30 metre median design, and to emphasize additional flexibility beyond that which is already provided is not practical at this time. This indicator, therefore, was considered of low importance when assessing network compatibility.	Low Importance
<u>1.3 Cost</u>		
a) Construction cost	Construction costs, including structural, pavement, appurtenance, and property costs were based on current unit prices and approximate quantities based on 1:10,000 scale plans. This indicator was considered of high importance when assessing cost.	High Importance
b) Operating cost	Operating costs, including enforcement, landscaping, energy usage and travel time are difficult to quantify and were assumed to be proportional to length. Impacts due to differences in route length are addressed primarily under Traffic Operations. This indicator, therefore, was considered of low importance when assessing cost.	Low Importance
c) Maintenance cost	Maintenance costs, including structural, pavement, and appurtenance maintenance costs, assumed to be relative to construction costs excluding property costs. This indicator was considered of moderate importance when assessing cost.	Moderate Importance

1.1 TRAFFIC OPERATIONS

INDICATOR	UNIT OF MEASURE	METHOD OF MEASUREMENT	REMARKS
c) Length of highway subject to potential slow moving vehicles	High, moderate, low	Determine length of route alternative with grade equal to or greater than 3%.	High >50%, Moderate <50% & >10%, Low < 10%
e) Design hour volume (forecast)	# of Vehicles	Calculate DHV (= 0.095 x AADT) for each sub-route, where AADT is given by Route B used in EMME/2 traffic model; where sub-routes are combined, use the highest DHV.	
r) Climatic conditions	Good, fair, poor	Subjective assessment of sensitivity to microclimatic variations, specifically drifting snow/ winter visibility hazards (based on length of sheltered roadway) and potential hazards under icy/foggy conditions (based on total length of structures). Sheltered is defined as protected by vegetation and/or urban development.	Good >50% Sheltered <10% Structures, Fair 10-50% Sheltered 10-25% Structures, Poor <10% Sheltered >25% Structures
t) Energy usage by a vehicle on alternative	Litres of fuel consumed (avg./vehicle)	Calculate fuel consumption during weekday a.m. peak hour using the Fuel Consumption Estimating Procedure (U.S. DOT, Federal Highway Administration, 1980). This procedure also considers the additional fuel consumed when the vehicle is stopped.	

1.2 NETWORK COMPATABILITY

INDICATOR	UNIT OF MEASURE	METHOD OF MEASUREMENT	REMARKS
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Subjective assessment of impacts on parallel/crossing roads resulting from changes in traffic volumes (compared to do-nothing).	
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Subjective assessment of impacts on parallel/crossing roads resulting from changes in traffic operations (compared to do-nothing).	
c) Consistency of design/operation	Good, Fair, Poor	Good =design/operation meets or exceeds standards of existing freeway; Fair = design/ operation not consistent with standards of existing freeway, but maintains freeway design speed; Poor =not consistent with standards of existing freeway and does not maintain freeway design speed.	
g) Length of construction period	Years (Minimum)	Estimated duration of construction of route alternative.	
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	Refer to ability to construct sections of the proposed highway which will function effectively with termini that will not result in significant negative impacts to the road network.	
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Good =able to add two additional lanes per direction; Fair = one additional lane per direction; Poor = no additional lanes could be added without impacting adjacent properties.	

1.3 COST

INDICATOR	UNIT OF MEASURE	METHOD OF MEASUREMENT	REMARKS
a) Construction cost	Comparative ratio (Lowest = 1.0)	Construction costs consist of capital construction costs (including structural, pavement and appurtenance costs) and property costs. These costs were based on unit prices provided by MTO.	Major difference if >50% than lowest; Moderate difference if >20% <50% than lowest;
b) Operating cost	Comparative ratio (Lowest = 1.0)	Operating costs, including enforcement, landscaping, energy usage and travel time assumed to be proportional to length.	Minor difference if >10%, <20%; No difference if <=10% than lowest.
c) Maintenance cost	Comparative ratio (Lowest = 1.0)	Maintenance costs associated with structural, pavement and appurtenance maintenance assumed to be relative to capital construction costs calculated in a). Property costs are not included in maintenance costs calculations.	

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

1

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO FACTOR	WEIGHT
<u>2. Natural Environment</u>			
2.1 Fisheries and Aquatic Habitat	Fisheries and habitat were assigned a moderate to high importance; high, because there is considerable regulatory interest in fish habitat and moderate, as mitigation measures are relatively well understood for this resource.	High to Moderate Importance	20
2.2 Wildlife	Wildlife was assigned a low to moderate importance as the species themselves cannot be viewed without the habitat (i.e. wetlands and vegetation) and in themselves have largely been used as an indicator of habitat quality and characteristics.	Low to Moderate Importance	10
2.3 Wetlands	Wetlands were assigned a very high importance in the weighting as these are unique habitats, typically have a high diversity of plants and animals associated with them, are difficult to mitigate, and the crossing results in the complete loss of the feature at that location.	High Importance	25
2.4 Vegetation	The criteria relates primarily to upland forested areas over other types of vegetation as it formed a significant component of the vegetation in the study area. Vegetation (forests) was assigned a very high importance in the weighting as these are important habitats, typically have a high diversity of plants and animals associated with them and cannot be mitigated, as the highway results in the complete loss of the feature where crossed.	High Importance	25
2.5 Ground Water	Groundwater was assigned only a moderate level of importance for this criteria. This was, in part, as large areas of the study area have relatively homogeneous soils conditions making it difficult to differentiate between routes on this basis. Nevertheless, it is difficult to mitigate for effects to ground water and it is an important contributor to streams and wetlands in the area.	Moderate Importance	15
2.6 Geology	Geology of the area was given a low level of importance as it evaluated the impact that the routes would have to significant Earth Science areas. There were few of these ANSIs in the study area and, although difficult to mitigate where encountered, were considered to be of low overall importance.	Low Importance	5

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

2

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
<p><u>2.1 Fisheries and Aquatic Habitat</u></p> <p>a) Water crossings or encroachments by stream order</p>	<p>Crossing of permanently flowing streams have the greatest potential to result in the delivery of sediment downstream to other portions of the streams or lakes. Further, those streams that flow year round have a greater potential to provide habitat for fish and other aquatic life. The quality of this habitat, however, can be subject to many factors. It is possible to have important fish habitat in tributaries that only flow at certain times of the year and this has been considered, under Indicator 2.1(d) Areas of Critical Fish Habitat (e.g., where pike are known to spawn in flooded grassy swales). In general, fish habitat is considered poor or absent in non-permanent streams. Therefore, the status of non-permanent flow maintained a stream crossing at the lowest ranking.</p> <p>Headwater streams, 1st, 2nd and possibly 3rd order watercourses associated with highly permeable soil have the potential to receive a high portion of their flow as ground water and therefore may be habitat for more sensitive cold water fisheries (see Indicator 2.1(e) Presence of Significant/Sensitive Warmwater/Coldwater Fish Communities). These streams are considered the hardest to mitigate.</p> <p>The general habitat characteristics and sensitivity level attributed to a 1st order stream and a 2nd order stream are similar, and therefore receive a similar ranking.</p> <p>Watercourses that are parallel to route segments can potentially receive road drainage over a distance equal to the length of encroachment, which, in some cases, can be for several kilometers. Although runoff issues are present at road crossings, lengthy encroachments are more difficult and costly to mitigate because the source of runoff is not contained to a specific location. Closely encroached streams are also particularly vulnerable to realignment as compared to crossings that can be bridged. For these reasons, encroachments in general receive a slightly higher impact score than crossings. [It should be noted that counts of perpendicular or point encroachments have been included, but with the understanding that the level of impact is assumed to decrease as the length of the encroachment lessens.]</p>	High
b) Permitted surface water intakes affected	Permitted surface water takings are potentially at risk of being impacted with respect to quantity or quality when located within close proximity to the highway alignment. The degree of risk is dependent upon the nature of the surface water body (i.e., pond or stream), hydraulic connection to the highway alignment, proximity to the highway alignment and, in the case of the stream, its flow characteristics. Only downstream areas were considered to be potentially impacted. Very few of these were identified and did not play a large role in the area.	Low
c) Presence of species at risk	<p>The Technical Report identified only one vulnerable fish species, reportedly in Mud Lake, which potentially affects routes C1 and C2. Even though the closest route crosses Pepperlaw Brook downstream of Mud Lake and at a distance likely too great to affect the habitat, acknowledgment of this species presence is made in the event that future field work finds it to be present at other nearby stream locations. The study area is not home to many species at risk and therefore they were not a major factor in the assessment.</p> <p>Species at risk include those listed as: endangered, threatened and vulnerable.</p>	Low

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

3

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
d) Areas of critical fish habitat	<p>Areas of critical habitat have been identified for spawning habitat and migratory runs as these are the two types of habitat associated with reproduction for which data was available. Critical habitat may be important in maintaining the population of the fish species in a given area and is usually afforded a greater level of protection to ensure no impact.</p> <p>Known migratory runs of fish from Lake Simcoe moving upstream to spawn were identified for the rivers in the study area. Migratory use of habitat is typically very mitigatable and can be maintained through virtually all crossing types. Therefore this type of habitat receives a lower ranking than spawning habitat for Walleye.</p>	High
e) Presence of warm water/cold water communities	<p>Occurrences of fish communities identify a general area of stream as being able to support one or more of the sensitive/significant communities, providing suitable habitat is maintained. Cold water communities are more sensitive than warm water and more difficult to mitigate and therefore were ranked higher in importance.</p> <p>Sensitive communities include: Brook Trout, Walleye and Sculpin.</p> <p>Significant communities include: Pike, Bass and Sunfish.</p>	Moderate

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

4

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
2.2 Wildlife		
a) Encroachment on or severance of forested vegetation or non-forested succession areas	The potential areas of forest and wetland lost due to highway crossing are used here as a measure of the value of these areas as wildlife habitat. The implication is that the greater the area of forest and wetland lost, the larger the impact.	High
b) Encroachment on or severance of greenways and open space linkages	Corridors include regional and local wildlife corridors. Corridors that are crossed higher in the watershed represent a fragmentation of regional wildlife corridors that connect beyond the study area to the Oak Ridges Moraine to the south, and west to the Niagara Escarpment. It is the relative placement of the fragmentation in the corridor that is significant, not its placement within the watershed.	High
c) Encroachment on or severance of significant wildlife habitat	No deer yards have been identified on a subroute. Waterfowl areas identified (e.g., Baldwin Pond) are not crossed by a subroute. There are two heronries. (No other significant habitats were identified by OMNR.) Proximity to the heronry was considered in the analysis. Indicator species were also used to identify significant areas of interior forest, large cattail marshes, and large swamps.	Moderate
d) Presence of species at risk	Measures impacts to species at risk including those listed as: Nationally Rare, Provincially Endangered, Provincially Rare and Regionally Rare.	Low

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

5

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
2.3 Wetlands		
a) Loss of function	The rationale followed for evaluating this indicator relates to the function of the wetland type that would be lost to highway construction. Marshes are characterized by standing water, and dominated by non-woody vegetation. Swamps are covered with at least 25% woody vegetation, either shrubs or trees, and may be seasonally or permanently inundated. The presence of fluctuating standing water is a condition more difficult to mitigate, and the potential to contaminate a larger area is greater (i.e., contaminants can spread through the aquatic medium faster, and have impact on a more complex biologic community). In addition, marshes are much more expensive to recreate as compared to swamps. For these reasons, a higher value is placed on the presence of marsh and swamps with standing water. Bogs and fens are extremely difficult wetland types for which to mitigate and are very rare in the landscape, hence the high value placed on them.	High
b) Loss of wetland area of all wetlands within study area	Generally, the greater the area of wetland lost, the larger the impact.	High
c) Degree of interaction of all wetlands with ground water	The surrounding soil type was used as an indicator of ground water interaction, because more difficult to mitigate ground water-supplied wetlands than surface water-sourced wetlands.	Low
d) Encroachment on (within 120 m) or severance of wetlands	Generally, the greater the encroachment or severance on wetlands, the greater the impact.	Moderate

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

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CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
2.4 Vegetation		
a) Encroachment on or severance of high quality forest stands	Generally, the greater the encroachment on severance of forest stands, the greater the impact. Linear corridors of 30 m or less in width that cross forests may constitute a constraint to interior habitat, but do not preclude it. In general, regional roads do not constitute severance, but Highway 48 does.	High
b) Encroachment on or severance of Life Science ANSIs	Measures encroachments on: Provincially Significant ANSI. Generally, the greater the encroachment or severance, the greater the impact.	Low
c) Encroachment on or severance of ESAs	Measures encroachments on: ESA (Conservation Authority). Generally, the greater the encroachment or severance, the greater the impact.	Low
d) Encroachment on or severance of Regional Forests	Measures encroachments on: Regional Forest, WIA forest. Generally, the greater the encroachment or severance, the greater the impact.	
e) Presence of significant species or specimens at risk	Measures impact to species or specimens at risk include: nationally rare, provincially endangered, provincially rare or rare in MNR Central Region and locally rare.	Low
f) Encroachment on or severance of unusual vegetation units	<p>A few natural areas, in our professional judgement, were of such significance for a combination of reasons, that they merited special recognition as unique communities. Factors that contributed to their identification included rarity in the landscape, rare species, species indicative of complex habitats and/or habitats of unusual size or high quality, or unique hydrology. This confluence of factors is not measured by any other criterion.</p> <p>Regionally Significant Areas: Silver Maple Swamp; Hemlock/Cedar lowland; Tamarack-dominated lowland; and mature upland hardwood communities.</p>	Moderate
g) Presence of riparian habitat	This factor recognizes the relationship among permeable soils, streams and forested cover (i.e., springs arising in riparian cedar groves are very important features that would be sensitive to highway location). Permanent headwater streams with forested riparian cover rely heavily on the forest cover for shade and organic inputs. Losses of this cover on small streams will have a more significant impact than on large streams where more of the water surface is exposed to sunlight and there is less dependence on leaf litter.	Moderate

HIGHWAY 404 EXTENSION EA NATURAL ENVIRONMENT EVALUATION CRITERIA

7

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
<p><u>2.5 Ground Water</u></p> <p>a) Ground water recharge - highly permeable soil and susceptibility to contamination</p>	<p>Generally, the greater area of permeable soils crossed, the greater the impact will be.</p> <p>The soil texture has a significant effect upon ground water recharge and the susceptibility to ground water contamination. Those areas are characterized by coarse textured soil such as sand and gravel. Highway construction and paving over of these soils could result in reduced ground water recharge. In addition, highly permeable soils directly adjacent to a highway could readily transmit contaminants into the ground water system thus posing a relatively high risk of contamination. Highly permeable soils also offer a direct pathway for contaminants to pollute streams. This criteria deals with both the potential for disruption to ground water recharge and susceptibility to ground water contamination rating permeable soils higher than non-permeable soils.</p>	High
b) Area of shallow ground water table affected	<p>Shallow depth to ground water table is a potential concern with respect to imposing physical constraints to highway construction. Depth of excavation may be limited and there is potential for disruption of the shallow ground water table. All wetlands are used as an indicator of shallow ground water table for the evaluation.</p> <p>Generally, the greater the area of shallow ground water affected, the greater is the impact.</p>	Moderate
c) Permit to take water	<p>The "permitted" wells were included in the route comparisons as these water takings are generally tied to large commercial operations or provide municipal water supplies. They, therefore, potentially represent significant costs or financial losses to the operations should they be adversely affected or lost as a result of the highway. The potential for impacts on both individual private non-permitted wells and 'permitted' wells completed in shallow unconfined aquifers has been accounted for under the above indicator 'susceptibility contaminations'.</p> <p>The location of a permitted water taking could potentially involve a well interference complaint as a result of the proximity of the highway or could involve the loss of the water taking if the highway were to require the removal of the well. This would also be a concern with private non-permitted wells, although the permitted water takings would represent potentially more significant liabilities to the proposed highway. Active permitted water takings were located by lot and concession. Lots were counted where subroute alignments crossed through them.</p>	Low

HIGHWAY 404 EXTENSION EA
NATURAL ENVIRONMENT EVALUATION CRITERIA

8

CRITERIA	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
<u>2.6 Geology</u> a) Encroachment on or severance of Earth Science ANSIs	Earth Science ANSIs are Areas of Natural and Scientific Interest. They represent exceptional examples of physical landforms or features that depict aspects of the geological history of Ontario. Their value may be compromised through physical disruption. The placement of a highway through such features could easily destroy the feature by removing it. In some cases, road cuts may expose geological formations that could have scientific and educational value. In this case, disruption could be considered beneficial. For purposes of the evaluation, it is assumed that there is potential for negative impacts from the highway.	Low

**HIGHWAY 404 EXTENSION EA
SOCIAL AND ECONOMIC EVALUATION CRITERIA**

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CRITERION	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO FACTOR	WEIGHT
<u>3 Social Environment</u>			
3.1 Community Effects	This criterion measures the impacts the highway would have on the overall community, community services and individual residents. Very important as it defines impacts to social fabric at both the community and individual level.	High Importance	60
3.2 Noise	Measures number of receivers which will experience an increase in sound greater than 5 dBA and a sound level greater than 55 dBA. Moderate as it is a subset of community effects.	Moderate Importance	30
3.3 Aesthetics	Measure number of house which would have view altered by the highway. Low to moderate as it is a subset of community effects	Low Importance	10

CRITERION	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO FACTOR	WEIGHT
<u>4 Economic Environment</u>			
4.1 Agricultural	Measure the impact the highway would have on each farm operation. Very important because the majority of the study area supports agricultural activity and because agricultural land is a non-renewable resource.	High Importance	70
4.2 Commercial/Industrial	Measure direct physical impact the highway would have on commercial/industrial facilities. Lower importance as the operations can be relocated.	Low Importance	30

**HIGHWAY 404 EXTENSION EA
SOCIAL AND ECONOMIC EVALUATION CRITERIA**

Page 2

INDICATOR	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
<u>3.1 Community Effects</u>		
a) Potential to displace existing residents	This indicator measures the number of households that will be displaced by an alternative. Even though displaced residents will be compensated at fair market value and will be provided with relocation assistance this indicator was given high importance.	High Importance
b) Potential to disrupt existing properties	This indicator measures the number of properties that will require some property taking but not enough to warrant displacement. This indicator was given moderate importance because many of the impacts associated with partial property taking are measure through other indicators (i.e., noise, aesthetics).	Moderate Importance
c) Potential to displace institutional and recreational features	This indicator measures the physical displacement of community services that area residents require. As such it was given high importance.	High Importance
d) Potential to disrupt institutional and recreational features	This indicator measures the number of community services that will require some property taking but not enough to warrant displacement. This indicator was given moderate importance because many of the impacts associated with partial property taking are measure through other indicators (i.e., noise, aesthetics).	Moderate Importance
e) Potential Impact to Community Cohesion	Cohesion refers to the amount and quality of social relations and interaction within a community, and the attraction to or identification with the community. This indicator measures the affect an alternative will have on cohesion and was given high importance.	High Importance
f) Potential Impact to Community Stability	This indicator measures change that will occur in the community in comparison to the community's inclination to change or maintain social continuity. As such, it was given high importance.	High Importance
g) Potential Impact to Community Character	This indicator measures the impact to the character of the community. Character refers to the physical, socio-cultural and economic features. Given the broad scope of this indicator it was given high importance.	High Importance
h) Potential disruption to emergency services	This indicator measure the effect on response time and additional service that may be required to maintain current service level. This indicator was given moderate importance because changes to emergency service levels produce significant impacts to area residents.	Moderate Importance
i) Potential to displace and or disrupt planned development	This indicator measures the impact to properties with approved development plans (draft plan of subdivision). Since these plans are approved they are considered existing. This indicator was given low importance because no actual residents are displaced and owners will be compensated at fair market value for property required.	Low Importance
j) Potential to impact future development	This indicator measures compatibility with local and regional Official Plans and was therefore given moderate importance	Moderate Importance
k) Potential reduction in community mobility	This indicator measure worst-case out-of-way travel for local residents as a result of road closings and the impact of reroute traffic on local traffic operations. This indicator was given low importance because many of these impacts are also included in the indicator of community cohesion and the factors of traffic operations and network compatibility.	Low Importance
<u>3.2 Noise</u>		
a) Potential Increase noise levels at adjacent receivers	Measure number of receivers with an increase of sound greater than 5 dBA and a sound level over 55 dBA.	Not Applicable
<u>3.2 Aesthetic</u>		
a) Potential to visually impact the landscape of sensitive viewer groups	Measures the number of houses that will have a view of the an alternative.	Not Applicable

TABLE 1 - AGRICULTURAL INDICATORS FOR THE COMPARATIVE EVALUATION OF POTENTIAL ROUTES - HIGHWAY 404 EXTENSION PROJECT (August 1996)

INDICATORS	RATIONALE	MEASURES	DATA SOURCE
<p>FARM OPERATION UNITS</p> <ul style="list-style-type: none"> Compare the potential each alternative has to effect operational viability of existing farm operations 	<ul style="list-style-type: none"> The intent of this indicator is to minimize the displacement or loss of capital invested in farm operations. Capital investment may include, but is not limited to barns, driving sheds, silos, feedlots, grain bins or elevators, milkhouses or sewage lagoons. This indicator will also attempt to minimize the impact that property severances will have on the continued operational viability of individual farm operations. The potential impacts from the severances will be assessed on a property by property basis, according to the existing land ownership fabric, which are typically 100 acre parcels of land. The operational viability is a function of how the property is severed and how the remaining agricultural resources (e.g. working fields) can be utilized and accessed. Another objective of this indicator is to minimize the loss of future flexibility for agricultural operations. Farms need the ability to change or modify with the changing economic climates. As stated in the Ontario Foodland Guidelines (1978), "farm operations must have the flexibility to meet changing economic conditions and remain competitive". This flexibility may include changes in the type of commodity produced, expansion or diversification of the farm operation, or intensification. Farm parcel sizes must stay sufficiently large to permit changes which may have different land requirements. 	<ul style="list-style-type: none"> Displacement of Capital Investment (i.e. farm complex/buildings) Orientation of the severance Separation of farm buildings from the working fields 	<ul style="list-style-type: none"> Airphoto Interpretation Windshield Surveys Public Information Centres Stakeholder Workshops
<p>SOIL CAPABILITY</p> <ul style="list-style-type: none"> Compare the potential each alternative has to displace soils with agricultural capability. 	<ul style="list-style-type: none"> The objective of this indicator is to minimize the loss of existing crop and pasture lands within York and Durham County that can be used for future agricultural use. The objective of this indicator is to minimize the loss of high soil capability (as defined by the Canada Land Inventory System) within York and Durham County. Agriculture land is protected by the provincial planning policy (Ontario Foodland Guidelines, 1978), which attempts to preserve specialty crop lands and Class 1, 2 and 3 agricultural soils for long term agricultural use. This indicator accounts for all existing and potentially viable lands that may or may not be actively worked. In a similar manner, this criterion attempts to preserve organic soils which have the potential for use as future specialty crops. 	<ul style="list-style-type: none"> The aerial extent of field crops, forage and pasture displaced. The aerial extent of specialty crops displaced. The aerial extent of organic farms displaced. The aerial extent of each Organic soils displaced. The aerial extent of each Class of soil capability displaced. 	<ul style="list-style-type: none"> CLI Mapping Consultation with OMAFRA OMAFRA Mapping Soils mapping Airphoto Interpretation Windshield Surveys Public Information Centres Stakeholder Workshops Airphoto Interpretation Canada Land Inventory Mapping for Soil Capability

TABLE 1 – AGRICULTURAL INDICATORS FOR THE COMPARATIVE EVALUATION OF POTENTIAL ROUTES – HIGHWAY 404 EXTENSION PROJECT (August 1996)

INDICATORS	RATIONALE	MEASURES	DATA SOURCE
LINKED OPERATIONS			
<ul style="list-style-type: none"> Compare the potential each alternative has to effect linked farming operations. 	<p>The objective of this criterion is to minimize the impact that property severances will have on the continued viability of linked farm operations. A linked operation is defined as one or more traditional farm operation unit that are combined together as a larger agricultural business. For the purposes of this criterion a linked operation includes rented, leased and/or owned buildings and lands.</p>	<ul style="list-style-type: none"> The aerial extent of farm operation units separated from the main farm complex 	<ul style="list-style-type: none"> Airphoto Interpretation Windshield Surveys Public Information Centres Stakeholder Workshops Property assessment rolls

Refer to the Agricultural Technical Paper for Definitions of terms included in this table (e.g. farm complex, specialty crops, mixed system)

TABLE 2: HIGHWAY 404 EXTENSION PROJECT – DECISIONING RULES FOR MEASURES STAGE

INDICATORS	MEASURES	MAJOR EFFECT	MODERATE EFFECT	MINOR EFFECT	NO EFFECT
(A) Farm Operation Units A.1. Compare the potential each alternative has to effect operational viability of existing farm operations.	i) Displacement of capital investment (e.g. farm complex buildings)	<ul style="list-style-type: none"> • Direct removal or placement of the right-of-way within 100m of a high value farm complex (refer to the technical paper for a definition of a high value farm complex) 	<ul style="list-style-type: none"> • Direct removal or placement of the right-of-way within 100m of a medium value farm complex (refer to the agricultural technical paper for a definition of a medium value farm) 	<ul style="list-style-type: none"> • Direct removal or placement of the right-of-way within 100m of a low value farm (refer to the agricultural technical paper for a definition of a low value farm) 	<ul style="list-style-type: none"> • Placement of right-of-way more than 100 m metres from the farm complex.
	ii) Orientation of the severance	<ul style="list-style-type: none"> • A diagonal severance that bisects a farm in half creating irregularly-shaped fields that are extremely difficult to work with conventional machinery (i.e. narrow and triangular-shaped fields less than 10 ha). 	<ul style="list-style-type: none"> • A horizontal severance that bisects a farm in a manner that creates two or more large fragments (e.g. down the middle of the farm) which are more difficult to work with conventional equipment. • Diagonal severance across one-third of the working fields creating irregularly shaped fields that are more difficult to work. 	<ul style="list-style-type: none"> • A severance that follows the back or mid-concession property boundary. 	<ul style="list-style-type: none"> • A severance that does not bisect or follow the property boundary of a farm operation.
	iii) Separation of farm buildings from the working fields	<ul style="list-style-type: none"> • A severance that completely or severely isolates more than 50% of the field crops, specialty crops and/or pasture systems from the farm complex (e.g. continued access requires rerouting more than 5 km). 	<ul style="list-style-type: none"> • A severance that completely or severely isolates between 25% to 50% of the field crops, specialty crops and/or pasture crops from the farm complex (e.g. continued access requires rerouting of more than 5 km). 	<ul style="list-style-type: none"> • A severance that completely or severely isolates less than 25% of the field crops, specialty crops and/or pasture crops from the farm complex (e.g. continued access requires rerouting of more than 5 km). 	<ul style="list-style-type: none"> • No severance or a severance that does not isolate any field crops, specialty crops and/or pasture from the farm complex.
(B) Soil Capability B.1. Compare the potential each alternative has to displace soils with agricultural capability	i) Aerial extent of the different types of crops displaced (i.e., field crops, forage, pasture, specialty crops and organic farms).	<ul style="list-style-type: none"> • Placement of the right-of-way directly within an area of specialty crops (e.g. nurseries, orchards, field vegetables) 	<ul style="list-style-type: none"> • Placement of the right-of-way within an area of continuous row crops and/or mixed crops system (including organic farms). 	<ul style="list-style-type: none"> • Placement of the right-of-way within an area of pasture forage or grazing system. 	<ul style="list-style-type: none"> • Placement of right-of-way within an area that does not have specialty crops, field crops pasture and/or grazing land.
	i) Aerial extent of the different classifications of soil capability displaced (Canada Land Inventory Mapping)	<ul style="list-style-type: none"> • Placement of the right-of-way directly within the area of organic or Class 1 and 2 land soil capability. 	<ul style="list-style-type: none"> • Placement of the right-of-way within an area of Class 3 and 4 soil capability. 	<ul style="list-style-type: none"> • Placement of the right-of-way within an area of Class 5, 6 and 7 soil capability. 	<ul style="list-style-type: none"> • Placement of the right-of-way in an area with no soil capability.
(C) Linked Farm Operations C.1. Compare the potential each alternative has to effect linked farming operations.	i) The aerial extent of linked farm operations units (including owned, rented and/or leased land) separated from the main farm complex	<ul style="list-style-type: none"> • A severance that completely or severely isolates more than 50% of the field crops, specialty crops and/or pasture systems from the farm complex (e.g. continued access requires rerouting more than 5 km) 	<ul style="list-style-type: none"> • A severance that completely or severely isolates between 25% to 50% of the field crops, specialty crops and/or pasture crops from the farm complex (e.g. continued access requires rerouting of more than 5 km). 	<ul style="list-style-type: none"> • A severance that completely or severely isolates less than 25% of the field crops, specialty crops and/or pasture crops from the farm complex (e.g. continued access requires rerouting of more than 5 km). 	<ul style="list-style-type: none"> • No severance or a severance that does not isolate any field crops, specialty crops and/or pasture from the farm complex.

TABLE 3: HIGHWAY 404 EXTENSION PROJECT – POINTS FOR DECISIONING RULES (INDICATOR STAGE)

INDICATORS	MEASURES	MAJOR EFFECT	MODERATE EFFECT	MINOR EFFECT	NO EFFECT
(A) Farm Operation Units					
A.1. Compare the potential each alternative has to effect operational viability of existing farm operations.	i) Displacement of capital investment (e.g. farm complex buildings)	<ul style="list-style-type: none"> Each displacement of a high value farm was given ten points to reflect the average loss of permanent capital investment (e.g. approximately \$500,000) 	<ul style="list-style-type: none"> Each displacement of a medium value farm was given five points to reflect the average loss of permanent capital investment (e.g. approximately \$250,000) 	<ul style="list-style-type: none"> Each displacement of a medium value farm was given one point to reflect the average loss of permanent capital investment (e.g. approximately \$50,000) 	<ul style="list-style-type: none"> Given a value of zero to reflect no loss of capital investment
	ii) Orientation of the severance	<ul style="list-style-type: none"> Five points for a diagonal severance to reflect the loss of approximately 50% of the existing specialty crops, field crops and/or pasture lands. 	<ul style="list-style-type: none"> Two and a half points for a horizontal severance or a partial diagonal severance to reflect the loss of approximately 25% of the existing specialty crops, field crops and/or pasture crops 	<ul style="list-style-type: none"> One point for a severance that follows a mid-concession property boundary to reflect the loss of approximately 10% of the specialty crops, field crops and/or pasture crops 	<ul style="list-style-type: none"> Zero points for a severance that does not bisect or follow the mid-concession property boundary.
	iii) Separation of farm buildings from the working fields	<ul style="list-style-type: none"> Ten points for a severe or complete severance of more than 50% of the working fields to reflect full loss of the operational viability of the farm operation. 	<ul style="list-style-type: none"> Five points to reflect the loss of between 25% to 50% of the working fields. 	<ul style="list-style-type: none"> Two and a half points to reflect the loss of up to 25% of the working fields. 	<ul style="list-style-type: none"> Zero points to reflect the loss of no working fields.
	INDICATOR GRAND TOTAL	<ul style="list-style-type: none"> Sum of all points for each measure 	<ul style="list-style-type: none"> Sum of all points for each measure 	<ul style="list-style-type: none"> Sum of all points for each measure 	<ul style="list-style-type: none"> Sum of all points for each measure
(B) Soil Capability					
B.1. Compare the potential each alternative has to displace soils with agricultural capability.	i) The areal extent of different types of crops (i.e., field crops, forage, pasture, specialty crops and organic farms) displaced.	<ul style="list-style-type: none"> Ten points per hectare of specialty crops to reflect the relatively high value of the crop and additional capital and time invested (e.g. tree nursery). 	<ul style="list-style-type: none"> Five points per hectare of continuous or mixed crop systems displaced to reflect the relative value of the crop. 	<ul style="list-style-type: none"> One point per hectare of forage or pasture system displaced to reflect the relative value of the crop. 	<ul style="list-style-type: none"> Zero points to reflect the loss of no specialty crops, field crops or pasture
	ii) The areal extent of the different classifications of soil capability displaced (Canada Land Inventory)	<ul style="list-style-type: none"> Five points per hectare of Class 1 and 2 land to reflect the loss of high soil capability. Five points per hectare of organic soils to reflect the loss of potential soil capability for valuable specialty crops. 	<ul style="list-style-type: none"> Two points per hectare of Class 3 and 4 land displaced to reflect the loss of moderate soil capability. 	<ul style="list-style-type: none"> One point per hectare of Class 5, 6 and 7 land displaced to reflect the loss of low soil capability 	<ul style="list-style-type: none"> Zero points to reflect the loss of no soil capability.
	INDICATOR GRAND TOTAL	<ul style="list-style-type: none"> Sum of total hectares displaced. 	<ul style="list-style-type: none"> Sum of total hectares displaced. 	<ul style="list-style-type: none"> Sum of total hectares displaced. 	<ul style="list-style-type: none"> Sum of total hectares displaced.
	The points for the two measures under this criteria were considered accumulative because they were straight measures of the same unit.				
(C) Linked Farm Operations					
C.1. Compare the potential each alternative has to effect linked farming operations	i) The areal extent of linked farm operations units (including owned, rented and/or leased land) separated from the main farm complex.	<ul style="list-style-type: none"> Ten points for a severe or complete severance of more than 50% of the working fields to reflect full loss of the operational viability of the farm operation. 	<ul style="list-style-type: none"> Five points to reflect the loss of between 25% to 50% of the working fields. 	<ul style="list-style-type: none"> Two and a half points to reflect the loss of up to 25% of the working fields. 	<ul style="list-style-type: none"> Zero points to reflect the loss of no working fields.
	INDICATOR GRAND TOTAL	<ul style="list-style-type: none"> Sum of all the points 	<ul style="list-style-type: none"> Sum of all the points 	<ul style="list-style-type: none"> Sum of all the points 	<ul style="list-style-type: none"> Sum of all the points

– Point system based on the average-sized farm operation unit of 40 ha. Larger or smaller sized farms were given adjusted points based on their relative to an average 40 ha parcel.

TABLE 4: HIGHWAY 404 EXTENSION PROJECT – DECISIONING RULES FOR CRITERIA STAGE

INDICATORS	RELATIVE		ABSOLUTE VALUE ¹	IMPORTANCE
	HIGH	LOW		
(A) Farm Operation Units				
A.1. Compare the potential each alternative has to effect operational viability of existing farm operations.	?	?	<ul style="list-style-type: none"> • Value based on a scale of zero to eight as follows: <ul style="list-style-type: none"> – 0 equals worst impact possible – 4 equals a neutral impact – 8 equals the most positive impact 	45%
(B) Soil Capability				
B.1. Compare the potential each alternative has to displace soils with agricultural capability.	?	?	<ul style="list-style-type: none"> • Value based on a scale of zero to eight as follows: <ul style="list-style-type: none"> – 0 equals worst impact possible – 4 equals a neutral impact – 8 equals the most positive impact 	45%
(C) Linked Farm Operations				
C.1. Compare the potential each alternative has to effect linked farming operations.	?	?	<ul style="list-style-type: none"> • Value based on a scale of zero to eight as follows: <ul style="list-style-type: none"> – 0 equals worst impact possible – 4 equals a neutral impact – 8 equals the most positive impact 	10%
FACTOR GRAND TOTAL	?	?	<ul style="list-style-type: none"> • Value based on a scale of zero to eight as follows: <ul style="list-style-type: none"> – 0 equals worst impact possible – 4 equals a neutral impact – 8 equals the most positive impact 	100%

Notes: ¹ – The absolute value is a qualitative interpretation based on the professional judgement of the project teams' agricultural specialist.

INDICATOR	DESCRIPTION/IMPORTANCE	RELATIVE IMPORTANCE TO CRITERION
<u>4.2 Commercial/Industrial</u>		
a) Potential to displace tourism businesses	This indicator measures the number of tourism oriented businesses that will be displaced by each alternative. Even though displacements will be compensated at fair market value this indicator was given high importance.	High Importance
b) Potential to disrupt tourism businesses	This indicator measures the number of tourism oriented businesses that will require some property taking but not enough to warrant displacement. This indicator was given moderate importance because many of the impacts associated with partial property taking are measure through other indicators (i.e., noise, aesthetics).	Moderate Importance
c) Potential to displace commercial/industrial businesses	This indicator measures the number of commercial/industrial businesses that will be displaced by each alternative. Even though displacements will be compensated at fair market value this indicator was given high importance.	High Importance
d) Potential to disrupt commercial/industrial businesses	This indicator measures the number of commercial/industrial businesses that will require some property taking but not enough to warrant displacement. This indicator was given moderate importance because many of the impacts associated with partial property taking are measure through other indicators (i.e., noise, aesthetics).	Moderate Importance

MEMORANDUM

MINISTRY OF TRANSPORTATION

Archaeology and Heritage
Unit
Environmental Section
Central Region
1201 Wilson Avenue
Atrium Tower, 5th Floor
Tel: (416) 235-5541

TO: Heather Pearson
Transportation Planning Office

DATE: September 6, 1996

RE: Highway 404 (Extension) - Archaeological Evaluation Raw Data

Please find attached 12 data sheets for the archaeological evaluation of the Highway 404(Extension) route.

The Evaluation Criteria tables identify the relative archaeological potential of the various route alternatives, using a combination of numbers of registered sites impacted and potential ratings (i.e. high, medium, low potential). The number of registered sites impacted appear as weighted figures. For example, the number "6" entered opposite "Iroquoian site" refers to only one Iroquoian site that will be impacted. The number "6" entered opposite "Archaic or 19th century site" refers to six Archaic or 19th century sites that will be impacted. The number "6" opposite "Paleo-Indian site" refers to three Paleo-Indian sites that will be impacted. In other words, each Iroquoian site impacted is the equivalent of impacting six Archaic/19th century sites or three Paleo-Indian sites. Each Paleo-Indian site counts as two Archaic or 19th century sites.

High, medium and low potential ratings are noted in the Evaluation Criteria tables as "H, M, and L". The amount of land impacted within a certain distance of water or beach ridges was translated into a relative potential rating. The more land impacted near water or a beach ridge, the higher the archaeological potential.

On the Route Comparison by Trade-Off Method data tables, each

alternative was compared and a preference assigned. A solid circle indicates preference for a certain route alternative because of low archaeological potential. When route alternatives were virtually identical with respect to one of the factors, they were assigned "SAME" instead of an open or solid circle.

Please forward these raw data tables to Cole-Sherman. Thanks for your patience.

Gary Warrick

Gary Warrick
Supervisor, Archaeology and Heritage Unit

The approach to deriving an impact study area for the evaluation of routes and route segments

The cultural heritage analysis throughout the study process addresses that part of the *Environmental Assessment Act* which defines "environment" in subsection 1(c) to include:

"...cultural conditions that influence the life of man or a community";

as well as,

"any building, structure, machine or other device or thing made by man".

Highway design and construction have the potential to affect heritage resources in a variety of ways. These include the displacement or loss of heritage resources through removal or demolition and the disruption of heritage resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the heritage resources and/or their setting.

The Minister of Citizenship, Culture, and Recreation is charged under Section 2 of the *Ontario Heritage Act* with the responsibility to "determine policies, priorities and programs for the conservation, protection and preservation of the heritage of Ontario" and has published two guidelines to assist in assessing heritage features as part of an environmental assessment: *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (October, 1992) and *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (1980). The most recent guideline (October, 1992) is termed a "first generation" document with a review and amendment process scheduled to follow the first year of circulation. The new Guideline indicates that "Reference may also be made to the MCC document *Guidelines on the Man-Made Heritage Component of Environmental Assessments*." Accordingly, both guidelines have been utilized in this highway route evaluation and provide guidance on the nature of heritage and environmental assessment.

The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* state:

"When speaking of man-made heritage we are concerned with the works of man and the effects of his activities in the environment rather than with movable human artifacts or those environments that are natural and completely undisturbed by man."

In addition, "environment" may be interpreted to include the combination and interrelationships of human artifacts with all other aspects of the physical environment as well as with the social, economic, and cultural conditions that influence the life of the people and communities in Ontario.

The *Guidelines on the Man-Made Heritage Component of Environmental Assessments* also state that one may distinguish broadly between two basic ways of visually experiencing this heritage in the environment - as cultural landscapes and as cultural features.

Cultural landscapes are defined in the *Guidelines* as:

"the use and physical appearance of the land as we see it now as a result of man's activities over time in modifying pristine landscapes for his own purposes. A cultural landscape is perceived as a collection of individual man-made features into a whole. Urban cultural landscapes are sometimes given special names such as townscapes or streetscapes that describe various scales of perception from the general scene to the particular view. Cultural landscapes in the countryside are viewed in or adjacent to natural undisturbed landscapes, or waterscapes, and include such land-uses as agriculture, mining, forestry, recreation, and transportation. Like urban cultural landscapes, they too may be perceived at various scales: as a large area of homogeneous character; or as an intermediate sized area of homogeneous character or a collection of settings such as a group of farms; or as a discrete example of specific landscape character such as a single farm, or an individual village or hamlet."

A cultural feature has been defined as:

"an individual part of a cultural landscape that may be focussed upon as part of a broader scene, or viewed independently. The term refers to any man-made or

modified object in or on the land or underwater such as buildings of various types, street furniture, engineering works, plantings and landscaping, archaeological sites, or a collection of such objects seen as a group because of close physical or social relationships.”

In order to augment built heritage data and to permit a comprehensive and consistent level of analysis across the expanded study area, as well as to permit a comparative analysis of routes and their impacts, a cultural landscape inventory was undertaken throughout the entire study area. This resulted in the mapping of a number of definable types of cultural landscape. These have been termed cultural landscape units for the purpose of this analysis. The built historical resource information collected by MTO was then utilized to inform of particular sensitivities associated with particular areas or routes.

MCTR guidelines advise that an adverse effect on man-made heritage includes the “introduction of physical, visual, audible, or atmospheric elements that are not in character with a cultural property and its setting”. The consideration of the “setting” of a cultural feature argues for a generous or liberal consideration of that area where impacts or changes to the environment are expected to occur.

There are few detailed guidelines that address nuisance impacts to heritage buildings or cultural features. MCTR guidelines, advise only that an adverse effect on man-made heritage includes the “introduction of physical, visual, audible, or atmospheric elements that are not in character with a cultural property and its setting”. Technical literature indicates that particulates, such as smoke, dust and sand particles that emanate from vehicles or are stirred up through their movement do have effects upon heritage features including discolouration of building fabric and abrasion. With respect to the acoustic environment of heritage features, intrusive noise and high levels of background noise may have to be countered by double glazing and the installation of air conditioning.

The effects of odour, dust and noise on heritage features have generally been documented in technical literature. There is not, however, reliable or definitive research or documentation that describe specific impacts to heritage

features within prescribed or clearly demarcated areas based on distance from the source of nuisance. Indeed, nuisance impact levels relate primarily to effects on humans rather than buildings or physical objects. It is the resultant mitigation of these nuisances by human intervention that most often results in adverse effects.

Accordingly, for the Historical criterion analysis a single impact study zone was identified for all route segments. This zone comprised lands on either side of the route or route segment within 500 metres. This accounted for a total study area of 1 kilometre width that included the route or route segment under study. Within this zone it is anticipated that there is potential for two types of effect to cultural property: displacement and disruption.

For the purposes of route evaluation a number of cultural landscape unit types had been identified through windshield survey and subsequently mapped for use in evaluation. These cultural landscape unit types were:

Farm Complexes: two or more buildings, one of which was either the farmhouse or a substantial barn. It typically included silos, drive sheds, pump houses and ancillary structures, as well as other landscape features such as a tree-lined drive, tree windbreaks, fences, gardens, and small orchards.

Roadscapes: these generally comprised roads of two or fewer lanes in width, paved or gravel, with narrow or no shoulders, lined by ditches, treelines, or fences, together with bridges and other associated features. This category also included abandoned or partially cleared road rights-of-way.

Railscapes: these comprised existing rail lines or abandoned lines.

Waterscapes: these comprised watercourses, together with vegetated banks of creeks, bridges, mill site ruins, that are clearly discernible in the landscape from the travelled portion of the road.

Settlement Centres: comprising areas of clustered settlement either towns, villages or hamlets.

Cemeteries: these comprised cemeteries including associated structures such as a church, dead house, cemetery keeper's cottage, or chapel.

For the purposes of route segment evaluation it was determined that "displacement" would comprise the following:

- potential loss or removal of any cultural landscape wholly contained within the proposed route;
- potential loss of adjacent farm complexes that may be displaced using the agricultural specialist's criteria, indicators and measures, i.e. usually complexes within 150 metres;
- potential loss of adjacent farm complexes that may be displaced using the transportation specialist's criteria, indicators and measures for the displacement of residences through loss of access; and,
- potential loss of roadscape through the introduction of major changes to that roadscapes that would result *road closures* or establishment of *interchanges* using the transportation specialists design criteria, indicators and measures. (Road closures and interchanges are considered to be very disruptive to established roadscape as they radically alter the continuity of the established, historical road network).

For the purposes of route segment evaluation it was also determined that "disruption" would comprise the following:

- potential disruption of any cultural landscape, excluding road, rail and waterscapes within 500 metres of the proposed route due to the introduction of physical, visual, audible, or atmospheric elements that are not in character with a cultural property and its setting. (Road, rail and waterscapes are essentially two dimensional features that because of their inherent characteristics would suffer little or no visual intrusion or would not be adversely effected by the introduction of transportation related audible or atmospheric elements.); and,
- potential disruption of roadscape through *grade separation* using the transportation specialists design criteria, indicators and measures. (Bridges are considered to be less disruptive to established roadscape as they assist in retaining the continuity of the established, historical road network).

Evaluation of Route Segments

Route segments were evaluated using the "Historical" criterion 5.2 and associated indicators and measures or sub-indicators as shown below.

TABLE 1: HISTORICAL CRITERION

FACTOR	CRITERIA	INDICATOR	MEASURES
5. Cultural Environment	5.2 Historical Examines the impact each alternative will have on heritage features	a) displacement of cultural landscapes b) disruption of cultural landscapes	number of cultural landscapes displaced type of cultural landscapes displaced number of cultural landscapes disrupted type of cultural landscapes disrupted

Individual built heritage features were not explicitly used as measures in the evaluation of route segments. In the derivation of route alternatives individual built heritage features that had been surveyed or otherwise denoted as being of value by a variety of agencies and individuals were used as screening mechanisms and generally avoided.

In the analysis of route segments cultural landscape units were the principal measure for comparative evaluation as they had been subject to comprehensive field survey. It was also understood that cultural landscape units contained a variety of individual built heritage features, (e.g., farm complexes encompass individual features such as farmhouses, barns, drivesheds and silos, and historical settlements contain features such as residences, commercial buildings and churches), and thus acted as surrogates for built heritage features in many instances.

The results of the built heritage feature survey were also consulted in the review of the results of route segment comparative evaluation as a sensitivity test.

TABLE 2: CULTURAL LANDSCAPE TYPE AND IMPORTANCE

CULTURAL LANDSCAPE UNIT IMPORTANCE	UNIT TYPE
<p>Very Important</p> <p>These are considered to be the dominant, character defining cultural landscape units within the study area. For the purposes of evaluation they are considered to be of prime importance in accounting for the cultural appearance of the environment. In the study area, farm complexes were classified as very important in establishing the rural character of the landscape. Additionally, farm complexes represent a long established history of Euro-Canadian agricultural settlement within the study area.</p>	<ul style="list-style-type: none"> • farm complexes
<p>Important</p> <p>These are considered to be less dominant and character defining than "Very Important" cultural landscape units within the study area. For the purposes of evaluation they are considered to play a secondary and contributing role in accounting for the cultural appearance of the environment. In the study area roadscares were classified as important in establishing the rural character of the landscape as they assist in organizing other landscape components such as the orientation of farm houses and crossroad settlements.</p> <p>Cemeteries were also included in this category, primarily for the spiritual and intangible role they play in the cultural landscape</p>	<ul style="list-style-type: none"> • roadscares • cemeteries
<p>Less Important</p> <p>These are considered to be less dominant and character defining than "Important" cultural landscape units within the study area. For the purposes of evaluation these types of cultural landscape are considered to play a tertiary and lesser role in accounting for the cultural appearance of the environment, essentially because they are less pervasive in the landscape and generally confined to specific locales. They are less important in establishing or organizing the dominant rural character of the landscape in the study area.</p>	<ul style="list-style-type: none"> • waterscares • rail lines • historical settlements

Evaluation of Route Segments by Criterion

AWAITING INPUT FROM CSA/MTO

Overall Route Segment Ranking and Impact Scoring

Following review of the potential impacts for each route segment study area, the route segments were compared and ranked. A best and worst route segment were identified for each comparison. These were then reviewed in the context of numerical analysis and the comparisons confirmed.

The individual route segments were then assigned a relative impact score based upon impacts generated on a previously agreed upon 0-8 scoring system: 0 denoted an absolute negative impact, 8 denoted an absolute positive impact and 4 reflected a neutral value of no impact. Although two or more route segments may be ranked with discernible differences identified the eventual impact score assignment may be the same. This occurs when the difference between or amongst route segments is minimal and they result in a similar degree of impact.

APPENDIX 6.B ROUTE ANALYSIS

ROUTE SEGMENT ANALYSIS AND EVALUATION

- **Preferred Route (North vs. South)**

NORTH vs. SOUTH - SUMMARY

1.1 TRAFFIC OPERATIONS

INDICATOR	MEASURE	North		South	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	<i>7200</i>	Higher	<i>5100</i>	Lower
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	<i>4.2</i>	Lower	<i>6.2</i>	Higher
		<i>7</i>		<i>5</i>	

North serves a higher design hour volume and results in a lower energy usage than South.

The North route has a high benefit to traffic operations and the South route has a low benefit.

1.2 NETWORK COMPATIBILITY

INDICATOR	MEASURE	North		South	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>High +</i>	Higher	<i>Low +</i>	Lower
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>High +</i>	Higher	<i>Low +</i>	Lower
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	<i>18</i>	Lower	<i>20</i>	Higher
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	<i>Good</i>	Higher	<i>Fair</i>	Lower
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	<i>Fair</i>	Lower	<i>Good</i>	Higher
		<i>7</i>		<i>5</i>	

The North route has a high benefit to traffic volumes, because it reduces volumes on much of the study area road network. The South route also reduces volumes on the road network, but to a much lesser extent and a smaller area of the road network than the North route. The South route has a low benefit to traffic volumes.

Similarly, the road network will realise improved operations over a greater area with the North route than the South route. The road network has a minor improvement in operations with South, and a high improvement with North.

The proximity of the North route to existing and future development will result in lower impacts to the local road network during staging than the South route as long-distance trips make their way to termini on local roads.

The North route produces a high benefit to network compatibility and the South route has a low benefit.

1.3 COST

INDICATOR	MEASURE	North		South	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Lower	<i>1.22</i>	Higher
b) Operating cost	Comparative Ratio (Lowest = 1.0)	<i>1.05</i>	Same	<i>1.00</i>	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Lower	<i>1.27</i>	Higher
		<i>3</i>		<i>2</i>	

The South route has more extensive wetland crossings which result in higher construction and maintenance costs than the North route.

The North route has a low cost impact and the South route has a moderate cost impact.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 4

INTERSECTION 2 – 15		RAW DATA	
EVALUATION CRITERIA		NORTH	SOUTH
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species, and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings – non-permanent flow	12	11
	number of water crossings – permanent flow		
	1st and 2nd order – high permeable soils	1	1
	1st and 2nd order – low permeable soils	0	2
	>3rd order – high permeable soils	1	1
	>3rd order – low permeable soils	1	3
	number of encroachments – non-permanent flow (<300 m)	8	2
	encroachment on Lake Simcoe (1–2 km)	1	0
	number of encroachments – permanent flow		
	(distance from watercourse <300 m)		
	1st and 2nd order – high permeable soils	0	1
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	1	1
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat – spawning	4	1
	area of critical fish habitat – migratory route	2	1
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	1
	sculpin	0	4
	walleye	0	0
	presence of significant communities		
	pike	2	0
	bass	2	3
	sunfish, minnows	2	4
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	area of forest (adjacent to wetlands) lost (ha)	65.7	86.4
2	encroachment on or severance of greenways and open space linkages		
	local greenspace crossings	5	1
	regional wildlife corridor	1	6
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	3	1
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	2	3
4	presence of species at risk		
	regionally rare species	5	3
	provincially rare species	1	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	6	16
	number of marshes/wet swamps crossed	6	4
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	8	15
	crossing of an abandoned farm	1	1
	crossing of a forest	8	11
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	18.1	49.4
3	degree of interaction of all wetlands with ground water		
	crossing of high	4	4
	encroachment on high	5	4
	crossing of moderate	1	3
	encroachment on moderate	1	5
	crossing of low	1	3
	encroachment of low	1	1
4	encroachment on or severance of wetlands		
	number of wetland crossings (PSW and local)	7	20
	area of encroachment (ha) – PSW and local wetlands	38.1	48.6
	number of wetland (PSW and local) encroachments	20	43

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 4

INTERSECTION 2 – 15		RAW DATA	
EVALUATION CRITERIA		NORTH	SOUTH
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	65.7	86.4
	number of forest crossings	21	27
	crossings of forests >400 ha	2	4
	crossings of forests 100–400 ha	1	2
	crossings of forests 40–100 ha	3	2
	crossings of forests 0–40 ha	8	7
	old growth forest crossed	1	1
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	3.8
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	19.1	18.2
5	presence of significant species or specimens at risk		
	regionally significant species	1	0
	locally significant species	2	2
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	36	53
	regionally significant vegetation	5	5
8	presence of riparian habitat (forested)		
	1st and 2nd order streams, permeable soils	0	1
	3rd order streams, permeable soils	0	0
	> 3rd order streams, permeable soils	0	1
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	245.2	169.6
2	shallow ground water table (ha)	18.1	49.4
3	permit to take water (ground water)	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	North Route	South Route
1 Potential to displace existing residences	a) Number of residences displaced	8 Higher	53 Lower
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	8 Higher	69 Lower
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	2 Snowmobile Lower	5 Snowmobile, 1 Reg. Forest Higher
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	high Higher	moderate Lower
6 Potential impacts to community stability	a) Potential effect on community stability	moderate Lower	high Higher
7 Potential impacts to community character	a) Potential effect on community character	moderate Same	moderate Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected	39/13/41/7 20 Lower	12/419/319/211 7/6141/7 22 Higher
	b) Police - % increase in response time/number of households Total number of households affected	39/13/9/1 14 Higher	5/219/1 3 Lower
	c) Ambulance - % increase in response time/number of households Total number of households affected	39/13/41/7 20 Higher	10/418/3141/7 14 Lower
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced	1 Pollock Est.	0
	b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 Higher	0 Lower
10 Potential to impact future development	a) Consistency with official plan boundaries	0 Same	0 Same
11 Potential reduction in community mobility	a) Number of road closings	2	9
	b) Length of road affected	6.913.3	2121211.411.413 .513.3
	c) Number of residences affected Total number of residences affected	1318 23 Higher	4151012101618 25 Lower
TOTAL		1	2
The south route produces lower overall community impacts because it impacts fewer residential properties and has less impact on community cohesion.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	North Route	South Route
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	26	107
	b) Number of cluster residential areas exposed to the highway	7	1
	c) Number of residences affected within each clustered area	132	8
		Higher	Lower
TOTAL		3	3
Both alternatives visually impact similar number of residences but, the north alternative impacts slightly more.			

(Weight = 30)

INDICATOR		NORTH				SOUTH			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	10	150	45	1	13	31	23	10
	51-55 dBA	12	123	1		9	5		
	56-60 dBA	4	0	0		2			
	61-65 dBA								
	66-70 dBA								
TOTAL		2				3			
The north route has greater noise impacts.									

TABLE 8: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 4

Intersection Points----->			
EVALUATION CRITERIA		B ROUTE	C ROUTE
		Raw Score	Raw Score
A) FARM OPERATION UNITS (numbers)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	2	4
	• displacement of medium value farm	2	2
	• displacement of low value farm	10	20
2)	Orientation of the severance		
	• diagonal severances	5	3
	• horizontal or vertical severance	42	18.5
	• severance along property boundary	27.5	55.5
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	6	10.5
	• isolation of between 25% to 50% of fields	16	8.5
	• isolation of less than 25% of the working fields	21	5.5
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	8.2	0
	• continuous or mixed system	178.25	282.54
	• pasture or grazing system	48	37.37
2)	Displacement of soils with capability for agriculture		
	• Organics	52	90
	• Class 1,2	235	336
	• Class 3,4	133	79
	• Class 5,6 and 7	3	45
C) LINKED FARMING OPERATIONS (numbers)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	1
	• isolation of between 25% to 50% of fields	4	3
	• isolation of less than 25% of the working fields	1	2

4.2 COMMERCIAL INDUSTRIAL

(Weight = 20)

INDICATOR	MEASURE	North Route	South Route
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	1 Same	1 Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0 Same	0 Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	2	0
	b) Number of industrial businesses displaced	2	1
	c) Number of aggregate operations displaced	0 Higher	0 Lower
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	3	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0 Higher	0 Lower
TOTAL		2	3
The north route results in higher business impacts.			
Weighted Score			

EVALUATION CRITERIA - N(A/B/D/E) vs S(A/C/D/E)

5. Cultural Environment	5.1 Archaeology	Indicator	N	S			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C = 1)	0 2 0	0 2 0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	L-M	L-M			
		c) amount of land within 200 m of water	M-H	L-M			
		Archaeological potential (high/med/low)	M	M			

		Score (0-4)	3	3			
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ROUTE COMPARISON BY TRADE-OFF METHOD - N(A/B/D/E) vs S(A/C/D/E)

FACTOR	N	S	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	Equal impact to known Paleo-Indian sites but greater potential for S(A/C/D/E) route to impact Iroquoian village and cemetery sites
b) Amount of land within 500 m of beach ridge	SAME	SAME	
c) Amount of land within 200 m of water	○	●	

Prefer N(A/B/D/E) because this route would bypass the known concentration of Iroquoian village sites and associated cemeteries.

South Route C/CZ/D2D/EI

Cultural landscapes displaced	7 roadscapes	5 roadscares
	1 (C2 Pts 10-11)	1 (B 2-3)
	4 (C Pts 2-10)	1 (B 7-8)
	2 (D2D/E1 Pts 11-15)	0 (B North)
		2 (B3 3-7)
		1 (D2D/E1)
	25 farm complexes	14 farm complexes
	Lot 21 Con 3 EG	Lot 34 Con 3 EG
	Lot 22 Con 3 EG	Lot 2 Con 4 G/G
	Lot 22 Con 4 EG	Lot 5 Con 4 G/G (12-179)
	Lot 22 Con 5 EG	Lot 6 Con 4 G/G
	Lot 21 Con 6 EG	Lot 12 Con 4 G/G
	Lot 21 Con 7 EG	Lot 14 Con 6 G/G
	Lot 22 Con 7 EG	Lot 19 Con 7 G/G
	Lot 22 Con 1 Ux	Lot 2 Con 6 G/G
	Lot 23 Con 2 Ux	Lot 6 Con 11 G/G (34-249)
	Lot 23 Con 2 Ux	Lot 19 Con 6 G
	Lot 22 Con 2 Ux	Lot 23 Con 6 G
	Lot 23 Con 3 Ux	Lot 24 Con 6 G
	Lot 22 Con 3 Ux	Lot 17 Con 1 T
	Lot 22 Con 4 Ux	Lot 10 Con 1 T
	Lot 23 Con 4 Ux	
	Lot 31 Con 4 Ux	
	Lot 33 Con 6 Ux	
	Lot 32 Con 6 Ux	
	Lot 17 Con 1 T	
	Lot 10 con 1 T	
	Lot 2 Con 13 B	
	Lot 3 Con 12 B	
	Lot 2 Con 11 B	
	Lot 7 Con 35 Ux	
	Lot 33 Con 33 Ux	

Route Segments: Pts 2-15

South Route C/C2/D2D/E1

North Route B/B3/B North/D2D/E1

Cultural landscapes disrupted	39 farm complexes	43 farm complexes
	Lot 20 Con 3 EG	Lot 21 Con 3 EG
	Lot 21 Con 3 EG	Lot 21 Con 3 EG
	Lot 21 Con 3 EG	Lot 20 Con 3 EG
	Lot 21 Con 4 EG (18-61)	Lot 30 Con 3 EG
	Lot 22 Con 4 EG	Lot 31 Con 3 EG
	Lot 23 Con 4 EG (16-66)	Lot 31 Con 3 EG
	Lot 24 Con 7 EG	Lot 32 Con 3 EG
	Lot 24 Con 8 EG	Lot 32 Con 3 EG
		Lot 33 Con 3 EG
	Lot 22 Con 8 EG	Lot 35 Con 3 EG
	Lot 21 Con 1 Ux	Lot 5 Con 4 G/NG
	Lot 23 Con 1 Ux	Lot 11-12 Con 4 G/NG
	Lot 24 Con 1 Ux	Lot 14 Con 4 G/NG (29-166)
	Lot 24 Con 2 Ux	Lot 12 Con 5 G/NG
		Lot 12 Con 5 G/NG
		Lot 14 Con 5 G/NG
	Lot 25 Con 4 Ux	Lot 15 Con 5 G/NG
	Lot 27 Con 4 Ux	Lot 12 Con 6 G/NG
	Lot 28 Con 4 Ux	Lot 13 Con 6 G/NG
	Lot 30 Con 4 Ux	Lot 16 Con 6 G/NG (29-237)
	Lot 31 Con 5 Ux	Lot 19 Con 7 G/NG
	Lot 33 Con 5 Ux	Lot 18 Con 7 G/NG
	Lot 31 Con 6 Ux (5-121)	Lot 20 Con 7 G/NG
	Lot 34 Con 6 Ux	Lot 21 Con 7 G/NG
	Lot 34 Con 7 Ux	Lot 4-3 Con 6 G/NG
	Lot 24 Con 2 G	Lot 13 Con 6 G
	Lot 2 Con 9 B	Lot 13 Con 6 G
	Lot 2 Con 10 B	Lot 15 Con 6 G
		Lot 16 Con 6 G (34-188)

Route Segments: B1, B2 and B3 (Revised Cont.)

Cultural landscapes disrupted	B1		B2		B3	
	farm complexes		farm complexes		farm complexes	
	Lot 1 Con 2 G/NG		Lot 13 Con 6 G/NG		Lot 12 Con 6 G/NG	
	Lot 3 Con 2 G/NG		Lot 11 Con 7 G/NG		Lot 13 Con 6 G/NG	
	Lot 4 Con 2 G/NG		Lot 13-14 Con 7 G/NG		Lot 16 Con 6 G/NG	
	Lot 5-6 Con 2 G/NG		Lot 3 Con 4 G/NG		Lot 19 Con 7 G/NG	
	Lot 8 Con 3 G/NG		Lot 6 Con 4 G/NG		Lot 18 Con 7 G/NG	
	Lot 11 Con 4 G/NG		Lot 7 Con 5 G/NG		Lot 20 Con 7 G/NG	
	Lot 10 Con 5 G/NG		Lot 8 Con 5 G/NG		Lot 21 Con 7 G/NG	
	Lot 10 Con 3 G/NG		Lot 8 Con 5 G/NG		Lot 4-3 Con 6 G/NG	
			Lot 10 Con 5 G/NG		Lot 4 Con 5 G/NG	
	1 historical settlement (Mt. Pleasant)		1 historical settlement (Baldwin)			
			1 cemetery			
	4 roadscares		6 roadscares		6 roadscares	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred Pefferlaw Crossing
(B North vs. B South)

EVALUATION CRITERIA - B1 vs B2 vs B3

5. Cultural Environment	5.1 Archaeology	Indicator	B1	B2	B3		
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 0	0 0 0	0 2 0		
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	L	M	M		
		c) amount of land within 200 m of water	M	L	H		
		Archaeological potential (high/med/low)	M	M	H		

		Score (0-4)	3	3	2		
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ROUTE COMPARISON BY TRADE-OFF METHOD - B1 vs B2 vs B3

FACTOR	B1	B2	B3	COMMENT
5.1 a) Number of registered sites directly impacted	●	●	○	B3 has higher impacts to Paleo-Indian sites
b) Amount of land within 500 m of beach ridge	●	○	○	B1 has the least amount of land along a beach ridge
c) Amount of land within 200 m of water	○	●	○	B2 has least amount of water sources nearby but B1 has considerably less than B3

Prefer B1

Route Segments: B1, B2 and B3 (Revised)

Cultural landscapes displaced (Known)	B1			B2		B3	
	5 roadscapes	4 roadscapes	2 roadscapes	4 roadscapes	2 roadscapes	2 roadscapes	
	1 rail line (abandoned)						
	8 farm complexes	9 farm complexes				9 farm complexes	
	Lot 34 Con 3 EG	Lot 34 Con 3 EG				Lot 34 Con 3 EG	
	Lot 2 Con 4 G/NG	Lot 2 Con 4 G/NG				Lot 2 Con 4 G/NG	
	Lot 5 Con 5 G/NG	Lot 6 Con 5 G/NG				Lot 5 Con 4 G/NG	
	Lot 5 Con 5 G/NG	Lot 12 Con 6 G/NG				Lot 6 Con 4 G/NG	
	Lot 5 Con 6 G/NG	Lot 12 Con 6 G/NG				Lot 12 Con 4 G/NG	
	Lot 6 Con 2 G/NG	Lot 11 Con 6 G/NG				Lot 14 Con 6 G/NG	
	Lot 8 Con 2 G/NG	Lot 11-12 Con 7 G/NG				Lot 19 Con 7 G/NG	
	Lot 6 Con 11 G/NG	Lot 13 Con 8 G/NG				Lot 2 Con 6 G/NG	
		Lot 6 Con 11 G/NG				Lot 6 Con 11 G/NG	
Cultural landscapes disrupted	21 farm complexes	23 farm complexes				23 farm complexes	
	Lot 30 Con 3 EG	Lot 30 Con 3 EG				Lot 30 Con 3 EG	
	Lot 31 Con 3 EG	Lot 31 Con 3 EG				Lot 31 Con 3 EG	
	Lot 31 Con 3 EG	Lot 31 Con 3 EG				Lot 31 Con 3 EG	
	Lot 32 Con 3 EG	Lot 32 Con 3 EG				Lot 32 Con 3 EG	
	Lot 32 Con 3 EG	Lot 32 Con 3 EG				Lot 32 Con 3 EG	
	Lot 33 Con 3 EG	Lot 33 Con 3 EG				Lot 33 Con 3 EG	
	Lot 35 Con 3 EG	Lot 35 Con 3 EG				Lot 35 Con 3 EG	
<i>This farm complex out (Metrus)</i>	Lot 3 Con 3 G/NG	Lot 3 Con 3 G/NG				Lot 3 Con 3 G/NG	
	Lot 5 Con 4 G/NG	Lot 5 Con 4 G/NG				Lot 5 Con 4 G/NG	
	Lot 5 Con 4 G/NG	Lot 5 Con 4 G/NG				Lot 11-12 Con 4 G/NG	
	Lot 6 Con 5 G/NG	Lot 5 Con 5 G/NG				Lot 14 Con 4 G/NG	
	Lot 6 Con 5 G/NG	Lot 8 Con 5 G/NG				Lot 12 Con 5 G/NG	
	Lot 4 Con 6 G/NG	Lot 9 Con 5 G/NG				Lot 12 Con 5 G/NG	
	Lot 5 Con 7 G/NG	Lot 10 Con 5 G/NG				Lot 14 Con 5 G/NG	
		Lot 12 Con 5 G/NG				Lot 15 Con 5 G/NG	

TABLE 6: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 3

Intersection Points----->				
EVALUATION CRITERIA		B1	B2	B3
		Raw Score	Raw Score	Raw Score
A) FARM OPERATION UNITS (numbers)				
1)	Displacement of Capital Value (e.g. farm complex)			
	• displacement of high value farm	1	1	1
	• displacement of medium value farm	0	0	2
	• displacement of low value farm	1	8	5
2)	Orientation of the severance			
	• diagonal severances	1	2	1
	• horizontal or vertical severance	14.5	20.5	24.5
	• severance along property boundary	7.5	6.5	16
3)	Separation of farm buildings from working fields			
	• isolation of greater than 50% of fields	2	2	2
	• isolation of between 25% to 50% of fields	0	2	4
	• isolation of less than 25% of the working fields	13.5	19	20
B) SOIL CAPABILITY (hectares)				
1)	Displacement of crop and pasture land			
	• specialty crops	3.5	0	5.2
	• continuous or mixed system	75.5	131.5	163.12
	• pasture or grazing system	43.4	35.1	20.6
2)	Displacement of soils with capability for agriculture			
	• Organics	60	35	44
	• Class 1,2	68	108	104
	• Class 3,4	61	84	92
	• Class 5,6 and 7	7	0	
C) LINKED FARMING OPERATIONS (numbers)				
1)	Effect on linked operations			
	• isolation of greater than 50% of fields	0	0	0
	• isolation of between 25% to 50% of fields	0	0	2
	• isolation of less than 25% of the working fields	2	1	1

4.2 COMMERCIAL INDUSTRIAL

(Weight = 20)

INDICATOR	MEASURE	B1	B2	B3
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0	0
	b) Number of jobs affected	0	0	0
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0	0
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	3	1	1
	b) Number of industrial businesses displaced	0	1 (Airport)	1
	c) Number of aggregate operations displaced	0	0	0
4 Potential to disrupt commercial/industrial businesses (partial property taking)		Second	Third	First
	a) Number of commercial businesses disrupted	0	0	0
	b) Number of industrial businesses disrupted	1	0	0
	c) Number of aggregate operations disrupted	0	0	0
TOTAL		Second	First	First
		2	1	3
B2 has the highest impact as it displaces the airport.				
Weighted Score				

HIGHWAY 404 ENVIRONMENTAL ASSESSMENT STUDY

sheet 2 of 4

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	B1	B2	B3
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	21	29	17
	b) Number of cluster residential areas exposed to the highway	1	4	2
	c) Number of residences affected within each clustered area	7	27	14
	TOTAL	First 3	Third 1	Second 3
B2 visually impacts more residences.				

3.3 NOISE

(Weight = 30)

INDICATOR		B1				B2				B3			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	2	20	13	1	6	47	26			55	42	1
	51-55 dBA					4	5			10	4		
	56-60 dBA	1											
	61-65 dBA												
	66-70 dBA												
TOTAL		3				2				1			
B3 has the highest impacts followed by B2 and B1 respectively.													

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 3**

INTERSECTION 3 - 7		RAW DATA		
EVALUATION CRITERIA		B1	B2	B3
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens				
1	encroachment on or severance of high quality forest			
	area of forest lost due to crossing (ha)	41.13	61.5	48.4
	number of forest crossings	13	15	12
	crossings of forests > 400 ha	2	1	1
	crossings of forests 100-400 ha	2	1	1
	crossings of forests 40-100 ha	0	1	1
	crossings of forests 0-40 ha	4	5	3
	old growth forest crossed	0	0	0
2	encroachment on or severance of Life Science ANSI's			
	area of ANSI's (outside wetlands) lost due to crossing	0	0	0
3	encroachment on or severance of ESA's			
	area of ESA's (outside wetlands) lost due to crossing	7	0	0
4	encroachment on or severance of regional forest			
	area of forest (outside wetlands) lost due to crossing	1.6	0	14.38
5	presence of significant species or specimens at risk			
	regionally significant species	2	0	1
	locally significant species	1	0	2
6	encroachment or severance of unusual vegetation units			
	locally significant vegetation	33	16	19
	regionally significant vegetation	2	0	4
8	presence of riparian habitat (forested)			
	1st and 2nd order streams, permeable soils	0	0	0
	3rd order streams, permeable soils	1	0	0
	> 3rd order streams, permeable soils	0	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply				
1	ground water recharge - highly permeable soil and susceptibility to contamination (ha)	155.6	130.2	152.1
2	shallow ground water table (ha)	25.15	4.8	11.33
3	permit to take water (ground water)	0	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms				
1	encroachment on or severance of Earth Science ANSI's	0	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	B1	B2	B3
1 Potential to displace existing residences	a) Number of residences displaced	25 First	33 Second	27 First
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	46 Third	65 Second	69 Third
3 Potential to displace institutional and recreational features	a) Number/type displaced	0	0	0
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	No Impact 2 snowmobile / 1 Nursing Home Same	No Impact 2 snowmobile Same	No Impact 2 snowmobile / 1 Info Centre Same
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	Low First	High Second	High Second
6 Potential impacts to community stability	a) Potential effect on community stability	High Second	High Second	Mod First
7 Potential impacts to community character	a) Potential effect on community character	Mod First	High Second	Mod First
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected b) Police - % increase in response time/number of households Total number of households affected c) Ambulance - % increase in response time/number of households Total number of households affected	39/13 13 39/13 13 39/13 13 Same	39/13 13 39/13 13 39/13 13 Same	39/13 13 39/13 13 39/13 13 Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0	0 0	0 (1 Pollock sub.) 0
10 Potential to impact future development	a) Consistency with official plan boundaries	First Outside Boundary Same	First Outside Boundary Same	Second Outside Boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	2 2 6.9 6 13 19 Third	2 1 6.9 5 13 18 Second	1 7 13 13 First
TOTAL		2	1	2
B2 has the highest overall impact as it effects the highest number of residences as well as creates the highest impact to communities. Overall, B1 & B3 produce similar impacts but B3 has slightly higher impacts.				

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

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B1 vs B2 vs B3 - SUMMARY

1.1 TRAFFIC OPERATIONS							
INDICATOR	MEASURE	B1		B2		B3	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Low	Same	Low	Same	Low	Same
e) Design hour volume (forecast)	# of Vehicles	7300	Same	7300	Same	7300	Same
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same
t) Energy usage on alternative	Litres of fuel consumed (avg./vehicle)	2.4	2nd	2.2	1st	2.1	1st
		6		7		7	
B1 has a higher energy usage than the other two alternatives.							
B2 and B3 provide a high benefit to traffic operations, B1 provides a moderate benefit.							
1.2 NETWORK COMPATIBILITY							
INDICATOR	MEASURE	B1		B2		B3	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Low +	Same	Mod +	Same	High +	Same
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Low +	Same	Mod +	Same	High +	Same
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same	Good	Same
g) Length of construction period	Years (Minimum)	5	Same	5	Same	5	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Good	Same	Good	Same	Good	Same
		5		6		7	
B3 is the closest to the major trip generating zones (Keswick and Sutton), compared to B2 and B3. This results in lower impacts to the area road network, because vehicles travel a relatively shorter distance on local roads. Traffic volumes on road sections connecting the highway to the major zones will meet or exceed capacity. Volumes on the remaining road sections will be reduced, compared to the do-nothing alternative. B1 and B2 are located further away from the major trip generating zones, and therefore have less of a benefit to the road network, with B1 providing the least benefit to traffic volumes on parallel/crossing roads.							
Similarly, for traffic operations, B3 produces a greater benefit to the area road network since traffic volumes are reduced over a greater area. The reduction in traffic volumes contributes to an improvement in traffic operations on the area road network. B1 provides the least benefit to traffic operations on parallel/crossing roads.							
B3 has a high benefit to network compatability, B2 has a moderate benefit and B1 has a low benefit .							
1.3 COST							
INDICATOR	MEASURE	B1		B2		B3	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.53	3rd	1.00	1st	1.16	2nd
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.07	Same	1.00	Same	1.08	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.60	3rd	1.00	1st	1.19	2nd
		1		3		3	
B1 has a much higher cost impact than B2 and B3 because B1 requires additional structures over wetlands.							
B2 and B3 have low cost impacts with B2 having slightly lower impacts. B1 has a high impact.							

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 3**

INTERSECTION 3 - 7		RAW DATA		
EVALUATION CRITERIA		B1	B2	B3
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species, and aquatic habitat				
1	water crossings or encroachments by stream order			
	number of water crossings - non-permanent flow	12	4	6
	number of water crossings - permanent flow			
	1st and 2nd order - high permeable soils	0	0	1
	1st and 2nd order - low permeable soils	0	0	0
	>3rd order - high permeable soils	1	0	0
	>3rd order - low permeable soils	2	1	1
	number of encroachments - non-permanent flow (<300 m)	7	5	7
	encroachment on Lake Simcoe (1-2 km)	0	0	0
	number of encroachments - permanent flow			
	(distance from watercourse <300 m)			
	1st and 2nd order - high permeable soils	1	0	0
	1st and 2nd order - low permeable soils	0	0	0
	>3rd order - high permeable soils	1	0	0
	>3rd order - low permeable soils	2	0	1
2	permitted surface water intakes affected	0	0	0
3	presence of species at risk			
	endangered	0	0	0
	threatened	0	0	0
	vulnerable	0	0	0
4	areas of critical fish habitat			
	area of critical fish habitat - spawning	3	1	2
	area of critical fish habitat - migratory route	1	0	1
5	presence of warmwater/coldwater communities			
	presence of sensitive communities			
	brook trout	0	0	0
	sculpin	0	0	0
	walleye	0	0	0
	presence of significant communities			
	pike	2	1	2
	bass	0	1	0
	sunfish, minnows	1	1	1
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat				
1	encroachment on or severance of forested vegetation or non-forested successional areas			
	area of forest (adjacent to wetlands) lost (ha)	41.13	61.5	48.4
2	encroachment on or severance of greenways and open space linkages			
	local			
	regional	3	4	3
		1	0	0
3	encroachment on or severance of significant wildlife habitat			
	route within 300 m of heronry	0	0	0
	route within 1 km of heronry	0	2	2
	route > 1 km of heronry	1	0	0
	number of large habitats	3	2	2
4	presence of species at risk			
	provincially rare	0	0	1
	regionally rare species	3	2	2
2.3 WETLANDS: examines the impact each alternative will have on wetland resources				
1	loss of function of all wetlands withing or adjacent to study area			
	number of swamps crossed	8	3	4
	number of marshes/wet swamps crossed	8	1	2
	number of fens/bogs crossed	0	0	0
	adjacent land use			
	crossing of an active farm	10	1	4
	crossing of an abandoned farm	0	0	0
	crossing of a forest	4	0	4
2	loss of wetland area of all wetlands within study area			
	area of wetland (PSW and local) lost due to crossing (ha)	25.15	4.8	11.33
3	degree of interaction of all wetlands with ground water			
	crossing of high			
	encroachment on high	5	2	2
	crossing of moderate	5	5	4
	encroachment on moderate	0	0	0
	crossing of low	0	0	0
	encroachment of low	2	0	1
		3	0	1
4	encroachment on or severance of PSW areas			
	number of wetland crossings (PSW and local)	12	3	4
	area of encroachment (ha) - PSW and local wetlands	53.95	23.1	28.05
	number of wetland (PSW and local) encroachments	35	10	7

Route Segments: Pts 2-15

Cultural landscapes disrupted	South Route C/C2/D2D/E1		North Route B/B3/B North/D2D/E1	
	farm complexes (cont'd)		farm complexes (cont'd)	
	Lot 2 Con 11 B (Cemetery 3-209)		Lot 17 Con 6 G	
	Lot 2 Con 12 B		Lot 18 Con 6 G	
	Lot 3 Con 13 B		Lot 4 Con 5 G/NG	
	Lot 3 Con 13 B		Lot 20 Con 6 G	
	Lot 4 Con 14 B		Lot 5 Con 14 B	
	Lot 16 Con 1 T		Lot 16 Con 1 T	
	Lot 15 Con 1 T		Lot 15 Con 1 T	
	Lots 9/10 Con 14 B		Lot 9/10 Con 14 B	
	Lot 11 Con 14 B		Lot 11 Con 14 B	
	Lot 14 Con 1 T		Lot 14 Con 1 T	
	Lot 13 Con 1 T		Lot 13 Con 1 T	
	Lot 12 Con 1 T		Lot 12 Con 1 T	
	Lot 9 Con 1 T		Lot 9 Con 1 T	
	Lot 9 Con 1 T		Lot 9 Con 1 T	
	8 roadscapes		7 roadscapes	
	2 (C2 Pts 10-11)		1 (B)	
	3 (C 2-3)		6 (B3 3-7)	
	3 (D2D/E1 11-15)		0 (B3 7-8)	
			0 (B North)	
			0 (D2D/E1 11-15)	
	1 cemetery			
	Lot 2 Con 11 B (3-209)			
	2 historical settlements		2 historical settlements	
	(Wilfrid, Udora D2D)		Pefferlaw (B North)	
			Port Bolster (D2D)	
Associated built heritage features	3-209 disrupt Lot 2 Con 11 B		12-179 displace Lot 5 Con 4 G/NG	
	5-121 disrupt Lot 31 Con 6 Ux		34-249 displace Lot 6 Con 11 G/NG	
	18-61 disrupt Lot 21 Con 4 EG		29-166 disrupt Lot 14 Con 4 G/NG	
	14-100 disrupt Lot 21 Con 1 Ux		29-237 disrupt Lot 16 Con 6 G/NG	
	16-66 disrupt Lot 23 Con 4 EG		34-188 disrupt Lot 16 Con 6 G	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred B (B1 vs. B2 vs. B3)

B North VS B South SUMMARY

1.1 TRAFFIC OPERATIONS (Weight = 40)					
INDICATOR	MEASURE	B-North		B-South	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Low	Same	Low	Same
e) Design hour volume (forecast)	# of Vehicles	4600	Same	4600	Same
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	1.5	Same	1.5	Same
TOTAL		5		5	
No significant differences in traffic operations between the two routes.					
Both Routes have a low benefit to traffic operations.					
1.2 NETWORK COMPATIBILITY (Weight = 40)					
INDICATOR	MEASURE	B-North		B-South	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same
g) Length of construction period	Years (Minimum)	2	Same	2	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	N/A	N/A	N/A	N/A
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Fair	Lower	Good	Higher
TOTAL		5		5	
Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments.					
Both alternatives can be upgraded to three lanes per direction, which is sufficient for the long-range (30 years +) planning horizon. B-North, however, cannot be upgraded to four lanes per direction, due to the reduced median width at the Pepperlaw Brook crossing. Since a fourth lane is not required in the foreseeable future, the two routes were considered to provide the same benefits to Network Compatibility.					
Both Routes have a low benefit to network compatability.					
1.3 COST (Weight = 20)					
INDICATOR	MEASURE	B-North		B-South	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.33	Higher	1.00	Lower
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.02	Same	1.00	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.17	Same	1.00	Same
TOTAL		2		3	
B-North carries a higher construction cost than B-South due primarily to additional roadworks required to maintain access to lands along Highway 48 and higher property costs.					
B-North has a moderate cost impact and B-South has a low cost impact.					

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 8 – 9		RAW DATA	
EVALUATION CRITERIA		B NORTH	B SOUTH
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings – non – permanent flow	1	1
	number of water crossings – permanent flow		
	1st and 2nd order – high permeable soils	0	0
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	1	0
	>3rd order – low permeable soils	0	1
	number of encroachments – non – permanently flowing (< 300 m)	0	0
	encroachment on Lake Simcoe (1 – 2 km)	1	1
	number of encroachments – permanently flowing		
	(distance from watercourse <300 m)		
	1st and 2nd order, > 50 m parallel	0	0
	1st and 2nd order, < 50 m parallel	0	0
	>3rd order, > 50 m parallel	0	0
	>3rd order, < 50 m parallel	0	0
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat – spawning	2	2
	area of critical fish habitat – migratory route	1	1
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	0
	walleye	0	0
	sculpin	0	0
	presence of significant communities		
	pike	0	0
	bass	1	1
	sunfish	1	1
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non – forested successional areas		
	information collected as part of 2.4 (1)	0.75	21.75
2	encroachment on or severance of greenways and open space linkages		
	local	1	1
	regional	0	0
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	0	0
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	1	2
4	presence of species at risk		
	regionally rare species	2	2
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	0	0
	number of marshes/wet swamps crossed	0	0
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	0	0
	crossing of an abandoned farm	0	0
	crossing of a forest	0	0
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	0	0
3	degree of interaction of all wetlands with ground water		
	crossing of high	0	0
	encroachment on high	0	0
	crossing of moderate	0	0
	encroachment on moderate	0	0
4	encroachment on or severance of wetlands		
	number of wetland (PSW and local) crossings	0	0
	area of encroachment (ha) – PSW and local wetlands	0	0
	number of wetland (PSW and local) encroachments	0	0

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 8 - 9		RAW DATA	
EVALUATION CRITERIA		B NORTH	B SOUTH
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	0.75	21.75
	number of forest crossings	1	3
	crossings of forests > 400 ha	0	0
	crossings of forests 100-400 ha	0	0
	crossings of forests 40-100 ha	1	2
	crossings of forests 0-40 ha	0	0
	old growth forest crossed	0	1
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	0	0
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	0	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	4	4
	regionally significant vegetation	0	3
8	presence of riparian habitat		
	forested riparian habitat - 1st and 2nd order streams	0	0
	forested riparian habitat - 3rd order streams	0	0
	forested riparian habitat - > 3rd order streams	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge - highly permeable soil and susceptibility to contamination (ha)	33.5	31.9
2	shallow ground water table (ha)	0	0
3	permit to take water	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	B North	B South
1 Potential to displace existing residences	a) Number of residences displaced	15 Higher	13 Lower
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	15 Higher	9 Lower
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	0 Same	0 Same
5 Potential impact to community cohesion	a) Potential effect on community cohesion	high Same	high Same
6 Potential impact to community stability	a) Potential effect on community stability	moderate Lower	high Higher
7 Potential impact to community character	a) Potential effect on community character	moderate Lower	high Higher
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected b) Police - % increase in response time/number of households Total number of households affected c) Ambulance - % increase in response time/number of households Total number of households affected	0 0 0 0 0 0 0 0 Same	0 0 0 0 0 0 0 0 Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 1/major Higher	0 0 Lower
10 Potential to impact future development	a) Consistency with official plan boundaries	within boundary Same	within boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	0 0 0 0 Same	0 0 0 0 Same
TOTAL		2	1
Both alternatives sever the Pefferlaw community and therefore have an extreme negative impact to community effects. However, in choosing between the two alternatives, B North contains more of the impacts within the existing Highway 48 corridor area, rather than introducing a new corridor. Therefore, B North is preferred.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	B North	B South
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	3	1
	b) Number of clustered residential areas exposed to the highway	4	2
	c) Number of residences affected within each clustered area	111	13
		Higher	Lower
TOTAL		2	3
B North visually impacts more residences.			

3.3 NOISE

(Weight = 30)

INDICATOR		B North				B South			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	11	87	2		2	75	110	17
	51-55 dBA	1	117	1		4	3	1	
	56-60 dBA	3							
	61-65 dBA	2	8						
	66-70 dBA								
TOTAL		2				2			
<p>B South introduces more residences to a noise increase than B North because it introduces a second highway corridor in the area. However, both alternatives impact a high number of residences.</p> <p>Both alternatives produce moderate impacts but B North is slightly preferred.</p>									

TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1

Intersection Points ----->		8 – 9	
EVALUATION CRITERIA		B NORTH Raw Score	B SOUTH Raw Score
A) FARM OPERATION UNITS (number of each)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	0	0
	• displacement of medium value farm	0	0
	• displacement of low value farm	2	1
2)	Orientation of the severance		
	• diagonal severances	1	0
	• horizontal or vertical severance	3	2
	• severance along property boundary	2	1
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	3	1
	• isolation of less than 25% of the working fields	1	2
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	0
	• continuous or mixed system	26.8	6.67
	• pasture or grazing system	5.8	1.25
2)	Displacement of soils with capability for agriculture		
	• Organics	0	0
	• Class 1,2	5	31
	• Class 3,4	0	0
	• Class 5,6 and 7	0	5
C) LINKED FARMING OPERATIONS (number of each)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	0	0
	• isolation of less than 25% of the working fields	0	0

EVALUATION CRITERIA - BN vs BS

5. Cultural Environment	5.1 Archaeology	Indicator	BN	BS			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 1	0 0 1			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	L	L			
		c) amount of land within 200 m of water	H	H			
		Archaeological potential (high/med/low)	M	M			

		Score (0-4)	3	3			
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ROUTE COMPARISON BY TRADE-OFF METHOD - BN vs BS

FACTOR	BN	BS	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	BS is closer to Deer site (Middle Woodland) than BN but neither directly impacts known limits of the site
b) Amount of land within 500 m of beach ridge	SAME	SAME	
c) Amount of land within 200 m of water	SAME	SAME	

Prefer BN

Route Segments: B North and B South

	B North	B South
Cultural landscapes displaced	farm complexes Lot 19 Con 6 G	farm complexes Lot 24 Con 6 G
	Lot 23 Con 6 G	
	Lot 24 Con 6 G	
Cultural landscapes disrupted	farm complexes Lot 20 Con 6 G	farm complexes Lot 19 Con 6 G Lot 20 Con 6 G
	1 waterscape (Pefferlaw Brook) 1 historical settlement (Pefferlaw) 1 railscape	1 waterscape (Pefferlaw Brook) 1 historical settlement (Pefferlaw) 1 railscape
Associated built heritage features	0	0

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred D/E Connection with B

FACTOR/Criteria	D2C\E1	D2D\E1	D2D\E2	D2E\E1	D2E\E2	COMMENT
1. TRANSPORTATION 1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	SAME	SAME	SAME	There is no significant difference among the alternatives in terms of traffic operations. All routes generate the same benefits. All alternatives provide a low benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	SAME	SAME	SAME	There is no significant difference among the alternatives in terms of network compatibility. All routes generate the same benefits. All alternatives provide a low benefit to network compatibility.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 	3rd	3rd	2nd	3rd	1st	Generally, the E2 routes are less expensive than the E1 routes because the E1 routes are slightly longer and require additional structures over wetlands. D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower impacts. D2C/E1, D2D/E1 and D2E/E1 have moderate cost impacts.
2. NATURAL ENVIRONMENT 2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	2nd	1st	2nd	1st	2nd	All route impacts of D2D/E2 and D2E/E2 are the same (critical crossing of walleye spawning habitat) D2C/E1 encroached on potential cold water habitat, also crosses 2-3 km upstream of walleye spawning habitat. D2D/E1 and D2E/E1 share comparable impacts (2-3 km upstream of walleye spawning habitat). D2C/E1, D2E/E2 and D2D/E2 produce high impacts to fisheries, D2D/E1 and D2E/E1 produce moderate impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 	3rd	3rd	2nd	2nd	1st	D2C/E1, D2D/E1 and D2D/E2 routes have higher impacts on the area's sensitive species (proximity to heronry) D2E/E1 has higher impacts to forested habitat D2E/E2 has low impacts to wildlife, D2D/E2 and D2E/E1 have moderate impacts, and D2C/E1 and D2D/E1 have high impacts.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 	5th	4th	3rd	2nd	1st	D2C/E1 crosses standing water in the high quality Gibson Hill Swamp, in addition to swamp and extensive forest habitat, the Swamp has a high interaction with ground water. D2D/E1 crosses the same wetland, but along an existing disturbance at the extreme north edge, but has similar forest impacts. D2D/E2 has similar wetland impacts to the latter, but has small forest impacts. D2E/E1 has a small wetland impact but large forest impacts, while D2E/E2 avoids both the wetland and the forest. D2C/E1 produces high impacts to wetlands, D2D/E2 and D2D/E1 produce moderate impacts, D2E/E1 produces a low impact and D2E/E2 has no impact.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 	5th	3rd	1st	4th	2nd	E1 routes all cross larger forests than the E2 routes. E1 routes also cross more locally significant species and locally significant vegetation units than the E2 routes. More stream crossings occur in the E2 routes than the E1 routes. D2C/E1, D2D/E1 and D2E/E1 produce moderate impacts to vegetation. Of these three, D2C/E1 has the highest impact and D2D/E1 has the lowest impact. D2D/E2 and D2E/E2 produce low impacts, with D2D/E2 having slightly lower impacts.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 	3rd	3rd	2nd	2nd	1st	Relatively large areas of highly permeable soil along all routes. Relatively large areas of shallow ground water table except D2E/E2 which has none. Relatively large areas sensitive to contamination along all routes. D2C/E1 and D2D/E1 produce high impacts to ground water. D2D/E2 and D2E/E1 produce moderate impacts while D2E/E2 produces low impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	SAME	SAME	SAME	SAME	SAME	No Earth Science ANSI's in vicinity of alignment None of the alternatives produce an impact.

FACTOR / Criteria		D2C\E1	D2D\E1	D2D\E2	D2E\E1	D2E\E2	COMMENT
3 SOCIAL ENVIRONMENT	3.1 Community Effects	2nd	1st	3rd	2nd	3rd	All the alternatives linearly split Brock Township. However the alternative which connects to E2 add the impact of splitting the Beaverton area as well. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred to D2D/E2 and D2E/E2. Of D2C/E1, D2D/E1, and D2E/E1, D2D/E1 is slightly preferred as utilizing the existing highway corridor is more consistent with the existing character of the area. D2C/E1, D2D/E1, D2E/E1 produce moderate impact to community effects but D2D/E1 produces slightly lower community effects. D2D/E2 and D2E/E2 produce high community effects.
	3.2 Aesthetics	2nd	1st	3rd	2nd	3rd	Alternatives which connect to E2 visually impact more residents than E2. Impacts along the D segments are similar. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred.
	3.3 Noise	2nd	1st	3rd	2nd	3rd	D2C/E1, D2D/E1, D2E/E1 produce moderate aesthetics impacts but D2D/E1 produces slightly lower impacts. D2D/E2 and D2E/E2 produce high aesthetics impacts.
	3.4 Noise	2nd	1st	3rd	2nd	3rd	The number of noise sensitive receivers experiencing an increase above existing is much lower with those alternatives which connect to E1. D2D minimizes impacts to those residences in the existing Highway 48 corridor. Therefore, D2D/E1 is preferred.
4 ECONOMIC ENVIRONMENT	4.1 Agriculture	2nd	1st	3rd	2nd	3rd	D2D/E1 produces a low impact, D2C/E1 and D2E/E1 produce moderate noise impacts, and D2D/E2 and D2E/E2 produce high noise impacts.
	4.2 Commercial/Industrial	2nd	1st	2nd	2nd	2nd	All routes produce high impacts to agricultural viability, but Routes D2D/E1 and D2D/E2 produce slightly lower impacts. All routes produce high impacts to soil capability except Route D2D/E1, which produces moderate impacts. The routes generally produce moderate impacts to linked farming operations, except the D2D routes, which produce low impacts.
	4.3 Commercial/Industrial	2nd	1st	2nd	2nd	2nd	Route D2D/E1 produces moderate impacts to agriculture and the other routes produce high impacts to agriculture.
	4.4 Commercial/Industrial	2nd	1st	2nd	2nd	2nd	D2D/E1 and D2D/E2 result in the displacement of two businesses.
5 CULTURAL ENVIRONMENT	5.1 Archaeological	2nd	1st	1st	1st	1st	D2D/E1 and D2D/E2 result in low impacts while the other alternatives result in no impacts.
	5.2 Archaeological	2nd	1st	1st	1st	1st	D2C/E1 produces moderate impacts while all other alternatives produce similar low impacts.
	5.3 Archaeological	2nd	1st	1st	1st	1st	D2C/E1 has one more crossing of major drainage than other routes.
	5.4 Archaeological	2nd	1st	1st	1st	1st	D2C/E1 produces moderate impacts while all other alternatives produce similar low impacts.
SUMMARY OF TRADE-OFFS		4th	1st	2nd	5th	3rd	D2D/E1 displaces least number of cultural landscape units and disrupts low number of cultural landscape units. All alternatives have moderate impacts, with D2D/E1 having the overall lowest impacts.
<p>Alternatives that connect to E1 were preferred to E2 because the lower social environment impacts more than offset the natural environment impacts. D2E/E1 was preferred to D2C/E1 because of much lower overall effects. D2D/E1 was preferred over D2E/E1 because the lower agricultural and social environment impacts more than offset the natural environment impacts.</p> <p>THEREFORE, D2D\E1 IS PREFERRED</p>							

Preferred D/E with B

1.0 Transportation

1.1 Traffic Operations

All routes produce the same benefits to traffic operations; they all serve the same portion of the study area.

1.2 Network Compatibility

All routes produce the same benefits to network compatibility; they all provide the same benefits to the local road network.

1.3 Cost

Alternative D2E/E2 has the lowest construction and maintenance costs, with D2D/E2 having slightly higher costs (respectively 19% and 20% higher than D2E/E2). The "E1" routes have higher construction and maintenance costs (between 25% and 36% higher than D2E/E2) because they are slightly longer (2% to 9% longer than D2E/E2) and require additional structures over wetlands which are not required with route E2.

D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower costs. D2C/E1, D2D/E1 and D2E/E1 have moderate cost impacts.

2.0 Natural Environment

Two alternatives D2D/E2, D2E/E2 cross six (6) permanently flowing watercourses each. E2 crosses two (2) watercourses, White's Creek and the Beaverton River, containing significant fish communities (bass) and possibly having critical habitat for bass spawning, although this has not been confirmed. The E2 route also crosses a reported walleye spawning area (critical habitat) in the Beaverton River, as well as a tributary of the Talbot River, where walleye spawning is known to occur downstream in the main channel. The remaining two crossings of Alsops Creek have no known significant or sensitive fish habitat or communities present.

The D2D and D2E segments of this route comparison each have crossings of only one (1) non-permanent watercourse and, therefore, have an equal level of impact.

Alternatives D2D/E1 and D2E/E1 have similar impacts as they both cross five (5) permanently flowing watercourses. The E1 route segment is located approximately 2 to 3 km further upstream of the E2 crossings of White's Creek and the Beaverton River, where there are known significant and sensitive habitats and fish communities as described above. While there are no known sensitive or significant fish communities at the E1 crossing of the Beaverton River, the potential for walleye migration and spawning in this vicinity has been assumed, given the presence of migratory runs further downstream. One fewer crossing of Alsops Creek results from the location of this route.

Alternative D2C/E1 crosses seven (7) permanently flowing watercourses including the 5 described for E1 above, and one tributary each of Vrooman Creek and Pepperlaw Brook, neither of which contain any known sensitive or significant fish habitat or communities. D2C/E1 also encroaches on potential coldwater habitat in the main branch of Vrooman Creek, as suggested by the presence of sculpins, a sensitive species indicative of coldwater conditions.

Alternatives D2D/E2 and D2E/E2 produce the highest impacts to fish and aquatic habitat based on the proximity to habitats and fish communities of known sensitivity or significance. D2C/E1, D2D/E1 and D2E/E1 produce moderate impacts to fish and aquatic habitats while D2C/E1 has a slightly greater effect than the other two with the common E1 section.

All five alternatives (D2C/E1, D2D/E1, D2D/E1, D2D/E2, D2E/E2) cross local wildlife corridors associated with the Alsop's and White's Creek valley lands. D2D/E2 and D2E/E2 also cross a local wildlife corridor to Lake Simcoe through the McLennan Beach Wetland. D2C/E1 however, produces the greatest impact to wildlife of these route alternatives as it contains three (3) crossings of a local wildlife corridor which runs from the Beaverton River through Gibson Hill Swamp and then branches south through Wilfred Bog and west to Pefferlaw. The D2C and D2D segments of these alternatives pass within one kilometer of a heronry.

All of the route alternatives contain indicator bird species for interior forest and large swamp habitats as reported in the Natural Environment Technical Report (GLL 1997). Rare bird species are encountered on D2C as well as the E1 segments which also indicate high quality, extensive forest habitat. No rare species are encountered on D2D/E2 or D2E/E2.

Route alternative D2E/E2 contains no wetlands along its length. The remaining alternatives in this section all encounter wetlands and result in some significant losses. The greatest loss is on Route D2E/E1 where 11.4 ha. of Brock 2 wetland are affected. D2D/E1 and D2D/E2 affect 8.1 ha. and 6.5 ha. of the Gibson Hill Swamp, respectively. D2C/E1 results in the loss of 7.1 ha. of the same swamp but also impacts marginally on the fen portion of this swamp which is an extremely rare feature in the study area. Generally, the E1 segment of the alternatives contains more forest adjacent to the wetlands than the E2 segment, although alternative D2D/E1 was found to have the most farmland adjacent which reduces its complimentary habitat value. D2D/E1 contains the highest number of marsh units which are considered more sensitive to impacts than swamps, and this route alternative also appears to have the highest interaction with the shallow ground water system.

The greatest forest losses are associated with route segment E1 having approximately 2.5 times greater losses than those of segment E2. D2C/E1 crosses one large forest which appears to provide interior breeding bird habitat as described above. The highest diversity of vegetation is encountered along the D2C/E1 route followed by the E1 segments alone as evidenced by the Simpson's Diversity Index results reported in the Natural Environment Technical Report (GLL 1997). E2 route segments are found to be the least diverse. A number of rare plant species (Tuckerman's Sedge, Balsam Ragwort and Prickly Ash) are encountered along route alternatives D2C/E1, D2D/E1 and D2E/E1, primarily associated with the E1 segment of the route alignment.

In summary, D2E/E2 produces the lowest impacts as it encounters no wetlands, it has low forest area losses, crosses three (3) local wildlife corridors and exhibits relatively low diversity of plant species. D2D/E2 also has a similar level of impact but encroaches within one kilometer of a heronry. D2E/E1 has the greatest forest loss, greatest wetland loss, crosses two local wildlife corridors and contains one rare bird species along its length. D2D/E1 also has large forest losses but only moderate wetland losses. It crosses two local wildlife corridors and encounters one rare bird species. D2C/E1 produces the highest level of impact, crossing large areas of forest, a moderate area of wetland (although close to the fen component of the wetland, which is a very rare feature within the study area), crosses five (5) local wildlife corridors and encounters two (2) rare species, both of which are indicative of the high quality forest and wetland habitats found along this route alignment.

No earth science ANSIs or permitted water taking are present on any of the route segments.

Relatively large areas of permeable soils are crossed by the five route alternatives with D2E/E1 crossing the largest area (174 ha.) and D2C/E1 crossing the smallest (102 ha.). The three other segments, D2D/E1, D2D/E2 and D2E/E2, affect 120, 108 and 154 ha. of permeable soils, respectively. D2E/E1 also crosses

the largest area with high water table (11.4 ha.) associated with Brock 2 wetland. D2E/E2 has the lowest impact as it does not cross any areas with high water table. The three other segments, D2C/E1, D2D/E1, and D2D/E2 cross 7, 8, and 7 ha. with high water table within Gibson Hill Swamp, respectively.

D2E/E1 produces the highest impacts to ground water, while D2D/E1 and D2E/E2 produce moderate impacts. D2C/E1 and D2D/E2 produce the lowest impacts, but since D2C/E1 crosses a smaller area of highly permeable soils, it is the preferred route.

3.0 Social Environment

3.1 Community Effects

Route "E1" passes east of Highway 12/48 while "E2" passes west of Highway 12/48, along the eastern urban boundary of Beaverton. The "E2" alternative separates the urban area of Beaverton from the highway commercial development node along Highway 12/48. The "E2" alternatives have a high impact to community cohesion, due to this splitting of the community of Beaverton. The "E1" routes have less of an impact to cohesion, since they do not sever the Beaverton community at large, but they represent a new corridor crossing Brock Township, and have a moderate impact to cohesion.

The "D2C" and "D2E" alternatives have high impacts to community stability and character, since they are located in large stable rural areas. The "D2D" alternatives have lower impacts to cohesion and stability because they closely parallel an existing highway right-of-way (Highway 48), and represent less of a change to the landscape.

The "E2" alternatives are generally less disruptive to community mobility (27 to 29 residences potentially affected) and have less potential disruption to emergency services (6 to 8 residences affected) since most of the road crossings would be maintained with grade separations or interchanges. This is reflective of the fact that E2 splits the Beaverton community and would require more road connections be maintained between Beaverton and Highway 12/48.

Of the "E1" alternatives, "D2C" has the highest disruption to community mobility (55 residences potentially impacted) and disruption to emergency services (41 to 55 homes potentially affected). "D2D" and "D2E" have similar disruption impacts: 42 residents with potential community mobility impacts, and 35 to 41 residences with potential affects to emergency services.

3.2 Aesthetics

The "E2" routes generally have higher aesthetic impacts due to the proximity of E2 to Beaverton. The "E2" alternatives impact 73 to 79 residences, while the "E1" routes, which are further from Beaverton, impact 19 to 24 residences.

3.3 Noise

The "E2" alternatives have higher potential noise impacts due to the proximity to Beaverton. The "E1" alternatives, which are further from Beaverton affect 16 to 28 residences with 8 to 12 homes having noticeable impacts. The "E2" alternatives impact 58 to 66 residences, with 36 to 39 residences having noticeable impacts.

4.0 Economic Environment

4.1 Agriculture

All five routes have high impacts to the operational viability of farm units but Routes D2D/E1 and D2D/E2 have the lowest impacts for all three measures with respect to farm operation units. Routes D2E/E1 and D2E/E2 displace the most capital investment, followed closely by Route D2C/E1. Routes D2C/E1 and D2E/E2 create the most diagonal and horizontal severances. The other three routes have

approximately equal impacts with respect to the orientation of severances, with the exception of Route D2D/E1 which has a lower impact. Route D2C/E1 has the highest impact with respect to the separation of working fields from farm complexes, followed closely by Route D2D/E1. The other three alternatives have approximately equal but moderate impacts to farm operation units. Overall, Route D2D/E2 has the lowest adverse impact for farm operation units.

All routes have high impacts to soil capability, but the impacts of D2D/E1 are significantly lower than the others. No routes displace specialty crops but large numbers of field crops, organic and Class 1-2 soils are displaced by all alternatives.

Routes D2C/E1, D2E/E1 and D2E/E2 result in the isolation of between 25% to 50% of fields from farm complexes for two farms each, resulting in moderate impacts to the operational viability of these operations. One farm is affected in this manner by each of Routes D2D/E1 and D2D/E2, resulting in relatively minor impacts to linkages. Therefore, the two latter routes are preferred, and are ranked equally with respect to linked operations. In general, Route D2D/E1 has the lowest impact for each of the agricultural indicators, although the impact to agricultural operations at this intersection is moderate.

4.2 Commercial/Industrial

The "D2D" alternatives displace two businesses along Highway 48: Port Bolster Stone and Gravel, and Summer Breeze Trailer Park. The stone and gravel business is an outlet operation, where products are brought for retail sales, not a production site. The trailer park is primarily a seasonal operation with approximately 50 sites, with some trailers stored on site year-round.

The other alternatives do not displace or disrupt any businesses.

5.0 Cultural Environment

5.1 Archaeology

D2C/E has a moderate potential impact on archaeological remains. All the other alternatives have a low potential impact on archaeological remains. None of the routes directly impacts a known archaeological site.

5.2 Historical

D2C/E1 displaces 13 farm complexes and 7 roadscares and disrupts 15 farm complexes, 3 roadscares and 1 cemetery.

D2D/E1 displaces 7 farm complexes and 4 roadscares and disrupts 16 farm complexes, 3 roadscares, 1 historical settlement and 1 cemetery.

D2D/E2 displaces 9 farm complexes and 4 roadscares and disrupts 16 farm complexes, 1 roadscape, 2 historical settlements and 1 cemetery.

D2E/E1 displaces 13 farm complexes and 6 roadscares and disrupts 20 farm complexes, 3 roadscares and 1 historical settlement and 2 cemeteries.

D2E/E2 displaces 11 farm complexes and 6 roadscape and disrupts 23 farm complexes, 1 roadscape, 2 historical settlements and 1 cemetery.

D2D/E1 has the least potential adverse impact with the lowest number of displacement effects to "very important" cultural landscapes and a low number of disruption effects. D2D/E2 has the second least potential adverse effects with a low number of displacement effects to "very important" cultural landscapes and a low number of disruption effects.

D2E/E1 is considered to have the greatest impact having a high number of impacts through both displacement to "very important" cultural landscapes and disruption. D2C/E1 has the second greatest impact through having the highest number of potential displacement effects to "very important" and "important" cultural landscapes ameliorated by the lowest number of disruption impacts. D2E/E2 has a high number of impacts to "very important" and "important" cultural landscapes and the highest number of disruption impacts.

All are of moderate impact as they involve displacement and disruption effects.

Trade-offs D's with B

None of the route alternatives produced lower impacts than the other alternatives for each criterion. D2D/E1 was preferred by the Project Team because:

- the E1 routes avoid the community of Beaverton, thereby reducing community effects, noise and aesthetic impacts to this community;
- Of the "E1" alternatives, "D2C" has the highest natural environment impacts, and higher social, economic and cultural impacts than D2D/E1; "D2C" was therefore not preferred;
- between D2D/E1 and D2E/E1, D2E/E1 had higher social, economic and cultural impacts, and lower natural environment impacts.
- overall, D2D/E1 has lower impacts and produces the same transportation benefits as the other alternatives

1.1 TRAFFIC OPERATIONS (Weight = 40)

INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Low	Same	Low	Same	Low	Same	Low	Same	Low	Same
e) Design hour volume (forecast)	# of Vehicles	4600	Same	4600	Same	4600	Same	4600	Same	4600	Same
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	2.3	Same	2.2	Same	2.1	Same	2.2	Same	2.2	Same
TOTAL		5		5		5		5		5	

There is no significant differences among the alternatives in terms of traffic operations.

All routes generate low benefits to traffic operations.

1.2 NETWORK COMPATIBILITY (Weight = 40)

INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Mod +	Same	Mod +	Same	Mod +	Same	Mod +	Same	Mod +	Same
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Low +	Same	Low +	Same	Low +	Same	Low +	Same	Low +	Same
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same	Good	Same	Good	Same	Good	Same
g) Length of construction period	Years (Minimum)	4	Same	4	Same	4	Same	4	Same	4	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
TOTAL		5		5		5		5		5	

There is no significant differences among the alternatives in terms of network compatibility.

All routes generate low benefits to network compatibility.

1.3 COST (Weight = 20)

INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.25	3rd	1.31	3rd	1.19	2nd	1.31	3rd	1.00	1st
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.09	2nd	1.05	1st	1.01	1st	1.02	1st	1.00	1st
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.29	3rd	1.34	3rd	1.20	2nd	1.36	3rd	1.00	1st
TOTAL		2		2		3		2		3	

Generally, the E2 routes are less expensive than the E1 routes because the E1 routes are slightly longer and require additional structures over wetlands.

D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower impacts. D2C/E1, D2D/E1 and D2E/E1 have moderate cost impacts.

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1**

INTERSECTION 9 – 13		RAW DATA				
EVALUATION CRITERIA		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat						
1	water crossings or encroachments by stream order					
	number of water crossings – non – permanent flow	0	0	1	0	1
	number of water crossings – permanent flow					
	1st and 2nd order – high permeable soils	2	2	2	2	2
	1st and 2nd order – low permeable soils	4	2	3	2	3
	>3rd order – high permeable soils	0	0	0	0	0
	>3rd order – low permeable soils	1	1	1	1	1
	number of encroachments – non – permanent flow (< 300 m)	0	0	0	0	0
	encroachment of Lake Simcoe (1 – 2 km)	0	0	0	0	0
	number of encroachments – permanent flow					
	(distance from watercourse <300 m)					
	1st and 2nd order – high permeable soils	1	0	0	0	0
	1st and 2nd order – low permeable soils	1	1	0	1	0
	>3rd order – high permeable soils	0	0	0	0	0
	>3rd order – low permeable soils	0	0	0	0	0
2	permitted surface water intakes affected	0	0	0	0	0
3	presence of species at risk					
	endangered	0	0	0	0	0
	threatened	0	0	0	0	0
	vulnerable	0	0	0	0	0
4	areas of critical fish habitat					
	area of critical fish habitat – spawning	2	2	3	2	3
	area of critical fish habitat – migratory route	2	2	2	2	2
5	presence of warmwater/coldwater communities					
	presence of sensitive communities					
	brook trout	0	0	0	0	0
	walleye	0	0	1	0	1
	sculpin	1	0	0	0	0
	presence of significant communities					
	pike	0	0	0	0	0
	bass	1	0	1	0	1
	sunfish	0	0	0	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat						
1	encroachment on or severance of forested vegetation or non – forested successional areas					
	information collected as part of 2.4 (1)	50.9	58	19.3	58	19.3
2	encroachment on or severance of greenways and open space linkages					
	local	5	2	3	2	3
	regional	0	0	0	0	0
3	encroachment on or severance of significant wildlife habitat					
	route within 300 m of heronry	0	0	0	0	0
	route within 1 km of heronry	1	1	1	0	0
	route > 1 km of heronry	0	0	0	0	0
	number of habitats supporting indicator species	2	2	2	2	2
4	presence of species at risk					
	regionally rare species	1	1	2	1	2
2.3 WETLANDS: examines the impact each alternative will have on wetland resources						
1	loss of function of all wetlands within or adjacent to study area					
	number of swamps crossed	2	3	2	6	0
	number of marshes/wet swamps crossed	3	4	2	1	0
	number of fens/bogs crossed	0	0	0	0	0
	adjacent land use					
	crossing of an active farm	6	4	4	8	0
	crossing of an abandoned farm	0	1	0	0	0
	crossing of a forest	2	1	1	3	0
2	loss of wetland area of all wetlands within study area					
	area of wetland (PSW and local) lost due to crossing (ha)	7.1	8.1	6.5	11.4	0
3	degree of interaction of all wetlands with ground water					
	crossing of high	1	2	1	1	0
	encroachment on high	2	1	1	2	0
	crossing of moderate	0	0	0	0	0
	encroachment on moderate	1	1	0	1	0
4	encroachment on or severance of wetlands					
	number of wetland (PSW and local) crossings	4	4	2	4	0
	area of encroachment (ha) – PSW and local wetlands	14.2	16	9.6	13.15	0
	number of wetland (PSW and local) encroachments	9	11	7	10	0

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1**

INTERSECTION 9 – 13		RAW DATA				
EVALUATION CRITERIA		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens						
1	encroachment on or severance of high quality forest					
	area of forest lost due to crossing (ha)	50.9	58	19.3	58	19.3
	number of forest crossings	10	14	14	15	12
	crossings of forests >400 ha	1	0	0	0	0
	crossings of forests 100–400 ha	0	0	2	0	2
	crossings of forests 40–100 ha	1	2	2	2	2
	crossings of forests 0–40 ha	8	9	7	7	6
	old growth forest crossed	0	0	0	0	0
2	encroachment on or severance of Life Science ANSI's					
	area of ANSI's (outside wetlands) lost due to crossing	0	0	0	0	0
3	encroachment on or severance of ESA's					
	area of ESA's (outside wetlands) lost due to crossing	0	0	0	0	0
4	encroachment on or severance of regional forest					
	area of forest (outside wetlands) lost due to crossing	0	0	0	0	0
5	presence of significant species or specimens at risk					
	regionally significant species	0	0	0	0	0
	locally significant species	3	3	0	3	0
6	encroachment or severance of unusual vegetation units					
	locally significant vegetation	25	22	13	23	14
	regionally significant vegetation	5	2	3	5	6
8	presence of riparian habitat					
	forested riparian habitat – 1st and 2nd order streams	0	0	1	0	1
	forested riparian habitat – 3rd order streams	0	0	0	0	0
	forested riparian habitat – > 3rd order streams	0	0	0	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply						
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	101.7	119.8	108.1	174.2	154.1
2	shallow ground water table (ha)	7.1	8.1	6.5	11.4	0
3	permit to take water	0	0	0	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms						
1	encroachment on or severance of Earth Science ANSI's	0	0	0	0	0

(Weight = 60)

3.1 COMMUNITY EFFECTS

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to displace existing residences	a) Number of residences displaced	14 Fourth	11 Second	10 First	10 First	13 Third
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	46 Fourth	47 Third	30 First	36 Second	30 First
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same	0 Same	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	0 Same	0 Same	0 Same	0 Same	0 Same
5 Potential impact to community cohesion	a) Potential effect on community cohesion	Same	Same	Same	Same	Same
6 Potential impact to community stability	a) Potential effect on community stability	moderate First	moderate First	high Second	moderate First	high Second
7 Potential impact to community character	a) Potential effect on community character	high Second	high Second	moderate First	high Second	moderate First
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected b) Police - % increase in response time/number of households Total number of households affected c) Ambulance - % increase in response time/number of households Total number of households affected	41/7 46/13 40/13 32/8 41 22/13 9/8 21/13 13/13 12/8 55 15/13 41/7 46/13 40/13 32/8 54 Third	41/7 46/13 40/13 32/8 41 9/1 21/13 13/13 12/8 35 41/7 46/13 40/13 32/8 41 Third	0 0 6 0 0 0 Second	46/13 40/13 32/8 34 16/3 20/5 21/13 13/13 12/8 42 46/13 40/13 32/8 34 Fourth	0 0 8 0 0 0 First
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0	0 0	0 0	0 0	0 0
10 Potential to impact future development	a) Consistency with official plan boundaries	Same outside boundary	Same outside boundary	Same outside boundary	Same outside boundary	Same outside boundary
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	6 1.5 3.5 3.3 3.2 3.1 3.1 0 13 8 13 13 8 55 First	4 3.3 3.2 3.1 3.1 8 13 13 8 42 Second	4 3.1 3.1 1.2 1.2 6 1 0 20 27 Third	5 2.6 3.1 3.2 3.1 3.1 42 Second	5 2.6 3.1 3.1 1.2 1.2 29 Third
TOTAL		2	2	1	2	1

All the alternatives linearly split Brock Township. However the alternative which connects to E2 add the impact of splitting the Beaverton area as well. Therefore, D2C/E1, D2D/E1, D2E/E1 and D2E/E1 are preferred to D2D/E2 and D2E/E2. Of D2C/E1, D2D/E1, D2E/E1 is slightly preferred as utilizing the existing highway corridor is more consistent with the existing character of the area.

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

B Connections

(Weight = 10)

3.2 AESTHETICS

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	23	19	11	24	17
	b) Number of clustered residential areas exposed to the highway	0	0	5	0	5
	c) Number of residences affected within each clustered area	0	0	62	0	62
		First	First	Second	First	Second
TOTAL		2	2	1	2	1
Alternatives which connect to E2 visually impact more residences than those which connect to E1. Impact along the D segments are similar. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred.						

(Weight = 30)

HIGHWAY 404 ENVIRONMENTAL ASSESSMENT STUDY

TOTAL

The number of noise sensitive receivers experiencing an increase above existing is much lower with those alternatives which connect to E1. D2D minimizes impacts to those residences in the existing Highway 48 corridor. Therefore, D2D/E1 is preferred.

TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1

Intersection Points ----->

		9 – 13					
		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2	
		Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	
EVALUATION CRITERIA							
A) FARM OPERATION UNITS (number of each)							
1)	Displacement of Capital Value (e.g. farm complex)						
	• displacement of high value farm	3	2	4	4	3	
	• displacement of medium value farm	2	0	1	4	4	
	• displacement of low value farm	6	5	5	3	6	
2)	Orientation of the severance						
	• diagonal severances	3	3	2	3	3	
	• horizontal or vertical severance	18.5	12	13	11.5	15.5	
	• severance along property boundary	10.5	9	9	12.5	11	
3)	Separation of farm buildings from working fields						
	• isolation of greater than 50% of fields	5	6	4	3	4	
	• isolation of between 25% to 50% of fields	4	1	1	1	1	
	• isolation of less than 25% of the working fields	11	4	4	10	10	
B) SOIL CAPABILITY (hectares)							
1)	Displacement of crop and pasture land						
	• specialty crops	0	0	0	0	0	
	• continuous or mixed system	147.3	96.75	144.37	146	166.62	
	• pasture or grazing system	8.75	15.18	18.87	8.5	9.4	
2)	Displacement of soils with capability for agriculture						
	• Organics	17	11	15	19	3	
	• Class 1,2	162	128	153	131	170	
	• Class 3,4	48	74	38	59	28	
	• Class 5,6 and 7	11	10	7	11	11	
C) LINKED FARMING OPERATIONS (number of each)							
1)	Effect on linked operations						
	• isolation of greater than 50% of fields	0	0	0	0	0	
	• isolation of between 25% to 50% of fields	2	1	1	2	2	
	• isolation of less than 25% of the working fields	0	0	1	0	0	

4.2 COMMERCIAL INDUSTRIAL

B Connections

(Weight = 20)

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced b) Number of jobs affected	0 0 Same	0 0 Same	0 0 Same	0 0 Same	0 0 Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0 First	1 Second	1 Second	0 First	0 First
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced b) Number of industrial businesses displaced c) Number of aggregate operations displaced	0 0 0 First	0 1 0 Second	0 1 0 Second	0 0 0 First	0 0 0 First
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted b) Number of industrial businesses disrupted c) Number of aggregate operations disrupted	0 0 0 Same	0 0 0 Same	0 0 0 Same	0 0 0 Same	0 0 0 Same
TOTAL		4	3	3	4	4
No Impact.						
Weighted Score						

EVALUATION CRITERIA - D2C/E1 vs D2D/E1 vs D2D/E2 vs D2E/E1 vs D2E/E2 (9-13)

5. Cultural Environment	5.1 Archaeology	Indicator	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	L	L	L	L
		c) amount of land within 200 m of water	M	M	M	M	M
		Archaeological potential (high/med/low)	M	L	L	L	L

		Score (0-4)	2	3	3	3	3
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ROUTE COMPARISON BY TRADE-OFF METHOD - D2C/E1 vs D2D/E1 vs D2D/E2 vs D2E/E1 vs D2E/E2 (9-13)

FACTOR	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	SAME	SAME	SAME	
b) Amount of land within 500 m of beach ridge	○	SAME	SAME	SAME	SAME	
c) Amount of land within 200 m of water	○	SAME	SAME	SAME	SAME	D2C/E1 has one more crossing of a major drainage than other alternatives

Prefer anyone of D2D/E1; D2D/E2/ D2E/E1; D2E/E2

Route Segments:

9-13

D2C/E1

D2D/E1

D2D/E2

D2E/E1

D2E/E2

Cultural landscapes displaced	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes	farm complexes
	Lot 11 Con 13	Lot 17 Con 1 T			Lot 17 Con 1 T		Lot 5 Con 14 B		Lot 5 Con 14 B	
	Lot 15 Con 14				Lot 12 Con 5		Lot 8 Con 5 T		Lot 8 Con 5 T	
					Lot 11 Con 6				Lot 11/12 Con 6	
					Lot 11 Con 9		Lot 9 Con 4 T		Lot 11 Con 9	
	Lot 2 Con 13 B						Lot 2 Con 13 B		Lot 12 Con 5	
	Lot 3 Con 13 B						Lot 3 Con 13 B		Lot 2 Con 13 B	
	Lot 8 Con 5 T						Lot 18 Con 2 T		Lot 3 Con 13 B	
	Lot 8 Con 5 T				Lot 12 Con 1 T		Lot 5 Con 13 B			
	Lot 13 Con 13 B	Lot 10 Con 1 T			Lot 12 Con 1 T		Lot 5 Con 14 B		Lot 5 Con 13 B	
	Lot 14 Con 13 B	Lot 9 Con 8 T			Lot 12 Con 2 T		Lot 6 Con 14 B		Lot 5 Con 14 B	
	Lot 14 Con 14 B	Lot 9 Con 9 T			Lot 10 Con 9 T		Lot 19 Con 1 T		Lot 6 Con 14 B	
	Lot 9 Con 4 T	Lot 8 Con 5 T			Lot 12 Con 2 T		Lot 8 Con 5 T			
	Lot 9 Con 1 T	Lot 9 Con 4 T					Lot 9 Con 8 T		Lot 19 Con 1 T	
	Lot 9 Con 8 T	Lot 8 Con 5 T					Lot 9 Con 9 T		Lot 10 Con 9 T	
	Lot 9 Con 9 T									
	7 roadscapes	4 roadscapes			4 roadscapes		6 roadscapes		6 roadscapes	
Cultural landscapes disrupted	farm complexes	farm complexes			farm complexes		farm complexes		farm complexes	
		Lot 5 Con 14 B			Lot 5 Con 14 B		Lot 12 Con 2 T		Lot 12 Con 2 T	
		Lot 16 Con 1 T			Lot 16 Con 1 T				Lot 4 Con 13 B	
	Lot 4 Con 13 B	Lot 15 Con 1 T			Lot 15 Con 1 T				Lot 19 Con 1 T	
	Lot 5 Con 13 B	Lot 9/10 Con 14 B					Lot 4 Con 13 B			
	Lot 5 Con 13 B	Lot 11 Con 14 T			Lot 9/10 Con 14 B		Lot 5 Con 13 B		Lot 5 Con 13 B	
	Lot 6 Con 13 B	Lot 14 Con 1 T			Lot 11 Con 14 T		Lot 6 Con 13 B		Lot 6 Con 13 B	
	Lot 10 Con 1 T	Lot 13 Con 1 T			Lot 14 Con 1 T		Lot 19 Con 1 T			
		Lot 12 Con 1 T			Lot 13 Con 1 T					
	Lot 13 Con 14 B	Lot 9 Con 1 T					Lot 6 Con 14 B		Lot 6 Con 14 B	
					Lot 12 Con 3 T					
	Lot 15 Con 13 B	Lot 9 Con 1 T			Lot 11 Con 3 T					
	Lot 15/16 Con 14 B	Lot 9 Con 3 T			Lot 12 Con 4 T		Lot 19 Con 2 T		Lot 19 Con 2 T	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred C (C1 vs. C2)

C1-2 summary

1.1 TRAFFIC OPERATIONS (Weight = 40)

INDICATOR	MEASURE	C1		C2	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Medium	Higher	Low	Lower
e) Design hour volume (forecast)	# of Vehicles	4300	Same	4300	Same
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	1.1	Lower	1.3	Higher
TOTAL		6		5	

C2 has a higher energy usage because it is longer than C1. The terrain on C1 is more rolling, increasing potential for slow vehicles.

C1 has a moderate benefit to traffic operations, C2 has a low benefit.

1.2 NETWORK COMPATIBILITY (Weight = 40)

INDICATOR	MEASURE	C1		C2	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same
g) Length of construction period	Years (Minimum)	2	Same	2	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	N/A	N/A	N/A	N/A
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Good	Same	Good	Same
TOTAL		5		5	

Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes.

Both routes produce low benefits to network operations.

1.3 COST (Weight = 20)

INDICATOR	MEASURE	C1		C2	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.00	Lower	1.13	Higher
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.00	Lower	1.11	Higher
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.00	Lower	1.16	Higher
TOTAL		3		3	

C2 carries generally higher costs than C1 because C2 is slightly longer and requires additional structures over wetlands.

Both routes have low cost impacts, with C1 having slightly lower impacts.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 10 - 11		RAW DATA	
EVALUATION CRITERIA		C1	C2
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings - non-permanent flow	2	1
	number of water crossings - permanent flow		
	1st and 2nd order - high permeable soils	0	0
	1st and 2nd order - low permeable soils	0	0
	>3rd order - high permeable soils	1	1
	>3rd order - low permeable soils	0	0
	number of encroachments - non-permanently flowing (< 300 m)	1	1
	encroachment on Lake Simcoe (1 - 2 km)	0	0
	number of encroachments - permanently flowing		
	(distance from watercourse <300 m)		
	1st and 2nd order - high permeable soils	0	0
	1st and 2nd order - low permeable soils	0	0
	>3rd order - high permeable soils	0	0
	>3rd order - low permeable soils	0	0
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	1	0
4	areas of critical fish habitat		
	area of critical fish habitat - spawning	0	0
	area of critical fish habitat - migratory route	0	0
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	0
	walleye	0	0
	sculpin	1	0
	presence of significant communities		
	pike	0	0
	bass	1	1
	sunfish	1	1
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	information collected as part of 2.4 (1)	12.4	13.8
2	encroachment on or severance of greenways and open space linkages		
	local	1	1
	regional	1	1
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	0	0
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	2	2
4	presence of species at risk		
	regionally rare species	3	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	3	6
	number of marshes/wet swamps crossed	0	1
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	2	6
	crossing of an abandoned farm	1	0
	crossing of a forest	0	0
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	3.3	10.5
3	degree of interaction of all wetlands with ground water		
	crossing of high	1	1
	encroachment on high	1	1
	crossing of moderate	1	0
	encroachment on moderate	1	0
4	encroachment on or severance of wetlands		
	number of crossings (PSW and local)	2	5
	area of encroachment (ha) - PSW and local wetlands	11.1	20.5
	number of wetland (PSW and local) encroachments	7	11

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 10 – 11		RAW DATA	
EVALUATION CRITERIA		C1	C2
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	12.4	13.8
	number of forest crossings	4	4
	crossings of forests >400 ha	1	1
	crossings of forests 100–400 ha	0	0
	crossings of forests 40–100 ha	0	0
	crossings of forests 0–40 ha	0	0
	old growth forest crossed	0	0
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	1.8	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	7.6	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	0	0
5	presence of significant species or specimens at risk		
	regionally significant species	2	0
	locally significant species	4	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	9	9
	regionally significant vegetation	0	3
8	presence of riparian habitat		
	forested riparian habitat – 1st and 2nd order streams	0	0
	forested riparian habitat – 3rd order streams	0	0
	forested riparian habitat – > 3rd order streams	1	1
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	46.9	45.5
2	shallow ground water table (ha)	3.3	10.5
3	permit to take water (ground water)	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS (Weight = 60)

INDICATOR	MEASURE	C1	C2
1 Potential to displace existing residences	a) Number of residences displaced	7 Same	7 Same
2 Potential to disrupt existing properties	a) Number of properties that will experience some property lose but not enough to warrant displacement	14 Lower	19 Higher
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	1/snowmobile Lower	2/snowmobile Higher
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	low Lower	moderate Higher
6 Potential impacts to community stability	a) Potential effect on community stability	high Same	high Same
7 Potential impacts to community character	a) Potential effect on community character	moderate Same	moderate Same
8 Potential disruption to emergency services	b) Fire - % increase in response time/number of households d) Police - % increase in response time/number of households f) Ambulance - % increase in response time/number of households	33 0 33 0 33 0 Higher	10 0 10 0 10 0 Lower
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0 Same	0 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	outside boundary Same	outside boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected	1 2 0 Same	1 2 0 Same
TOTAL		3	2
C1 is preferred to C2 because it has less of an impact on community cohesion. Although potential impacts to emergency response time are higher with C1, no existing residents are directly affected by either alternative.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	C1	C2
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	10	14
	b) Number of cluster residential areas exposed to the highway	0	0
	c) Number of residences affected within each clustered area	0	0
		Lower	Higher
TOTAL		2	2
C2 visually impacts more farmstead residences.			

3.3 NOISE

(Weight = 30)

INDICATOR		C1				C2			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA		3	8	3		5	7	2
	51-55 dBA								
	56-60 dBA								
	61-65 dBA								
	66-70 dBA								
	TOTAL		2				2		
Both alternatives produce similar impacts but C1 results in slightly higher impacts.									

**TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1**

Intersection Points ----->		10 – 11	
EVALUATION CRITERIA		C1	C2
		Raw Score	Raw Score
A) FARM OPERATION UNITS (number of each)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	0	0
	• displacement of medium value farm	1	0
	• displacement of low value farm	5	6
2)	Orientation of the severance		
	• diagonal severances	1	1
	• horizontal or vertical severance	3	2
	• severance along property boundary	7	10
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	0	1
	• isolation of between 25% to 50% of fields	0	1
	• isolation of less than 25% of the working fields	5	1
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	5.5	0
	• continuous or mixed system	56.3	69.6
	• pasture or grazing system	9.75	9.25
2)	Displacement of soils with capability for agriculture		
	• Organics	23	11
	• Class 1,2	94	111
	• Class 3,4	34	20
	• Class 5,6 and 7	10	29
C) LINKED FARMING OPERATIONS (number of each)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	0	0
	• isolation of less than 25% of the working fields	3	1

4.2 COMMERCIAL INDUSTRIAL (Weight = 20)





INDICATOR	MEASURE	C1	C2
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0
	b) Number of jobs affected	0	0
		Same	Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0
		Same	Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0
	b) Number of industrial businesses displaced	0	0
	c) Number of aggregate operations displaced	0	0
		Same	Same
4 Potential to disrupt commercial/industrial businesses	a) Number of commercial businesses disrupted	0	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0	0
		Same	Same
TOTAL		4	4
No Impacts.			
Weighted Score			

EVALUATION CRITERIA - C1 vs C2

5. Cultural Environment	5.1 Archaeology	Indicator	C1	C2			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	?	?			
			0	0			
			0	0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	H	M			
		c) amount of land within 200 m of water	H	L			
		Archaeological potential (high/med/low)	H	M			

		Score (0-4)	1	3			
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ROUTE COMPARISON BY TRADE-OFF METHOD - C1 vs C2

FACTOR	C1	C2	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	Both are very close to unverified and imprecisely-located Iroquoian village site
b) Amount of land within 500 m of beach ridge			Most of C1 follows Lake Algonquin beach ridge and very high potential for impacting Paleo-Indian sites
c) Amount of land within 200 m of water			

Prefer C2

Route Segments: C1 and C2

Cultural landscapes displaced	C1		C2	
	farm complexes		farm complexes	
	Lot 23 Con 4		Lot 23 Con. 4	
	Lot 22 Con 4		Lot 22 Con 4	
	Lot 22 Con 5		Lot 31 Con. 4	
	Lot 23 Con. 5		Lot 33 Con. 6	
	Lot 32 Con 6		Lot 32 Con 6	
	Lot 33 Con 6			
			1 roadscapes	
Cultural landscapes disrupted	farm complexes		farm complexes	
	Lot 23 Con 5		Lot 25 Con 4	
	Lot 26 Con 6		Lot 27 Con 4	
	Lot 29 Con 6		Lot 28 Con 4	
	Lot 30 Con 6		Lot 30 Con 4	
	Lot 31 Con 6		Lot 31 Con 5	
			Lot 33 Con 5	
	Lot 24 Con 4		Lot 31 Con 6	
			Lot 34 Con 6	
	2 roadscapes		2 roadscapes	
Associated built heritage features	5-121 Disrupted		9-116 Disrupted (At edge)	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred D/E Connection with C

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

8/16/96

D2A vs D2D - SUMMARY

1.1 TRAFFIC OPERATIONS

INDICATOR	MEASURE	D2A/E1		D2D/E1	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	<i>3300</i>	Lower	<i>3700</i>	Higher
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	<i>2.8</i>	Same	<i>2.8</i>	Same
		5		6	

D2D/E1 serves more vehicles than D2A/E1 due to the additional interchange with Highway 48 near Pefferlaw.

D2D/E1 has a moderate benefit to traffic operations and D2A/E1 has a low benefit.

1.2 NETWORK COMPATIBILITY

INDICATOR	MEASURE	D2A/E1		D2D/E1	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>Mod +</i>	Same	<i>Mod +</i>	Same
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>Mod +</i>	Same	<i>Mod +</i>	Same
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	<i>8</i>	Lower	<i>9</i>	Higher
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
		6		6	

D2D serves the future growth areas around Pefferlaw, which provides minor relief to the Highway 48 corridor west of Pefferlaw. D2A provides no such benefit to the road network. Although this benefit is realised outside the area directly served by the two routes, it represents a notable difference between these two routes. D2D has a slightly higher benefit to volumes on parallel/crossing roads.

Similarly, for traffic operations, both route alternatives generate a moderate benefit to the road network by reducing the volumes, thereby improving operations on crossing/parallel routes. D2D improves operations in the Highway 48 corridor west of Pefferlaw by diverting some traffic away from this corridor. D2D has a slightly higher benefit to operations of parallel/crossing roads.

Both routes have a moderate benefit to network compatibility, with D2D/E1 having slightly higher benefits.

1.3 COST

INDICATOR	MEASURE	D2A/E1		D2D/E1	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Same	<i>1.08</i>	Same
b) Operating cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Same	<i>1.07</i>	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Same	<i>1.10</i>	Same
		3		3	

No significant differences in costs.

Both routes have a low cost impact.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 3

INTERSECTION 11 – 13		RAW DATA	
EVALUATION CRITERIA		D2A/E1	D2D/E1
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species, and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings – non-permanent flow	3	0
	number of water crossings – permanent flow		
	1st and 2nd order – high permeable soils	2	2
	1st and 2nd order – low permeable soils	3	4
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	2	2
	number of encroachments – non-permanent flow (<300 m)	2	1
	encroachment on Lake Simcoe (1–2 km)	0	0
	number of encroachments – permanent flow		
	(distance from watercourse <300 m)		
	1st and 2nd order – high permeable soils	1	0
	1st and 2nd order – low permeable soils	0	1
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	1	1
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat – spawning	3	3
	area of critical fish habitat – migratory route	2	2
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	1	1
	sculpin	2	2
	walleye	0	0
	presence of significant communities		
	pike	0	0
	bass	2	2
	sunfish, minnows	1	1
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	area of forest (adjacent to wetlands) lost (ha)	62	74.95
2	encroachment on or severance of greenways and open space linkages		
	local greenspace crossings	4	2
	regional wildlife corridor	1	1
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	1	1
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	2	2
4	presence of species at risk		
	regionally rare species	1	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands within or adjacent to study area		
	number of swamps crossed	11	9
	number of marshes/wet swamps crossed	4	4
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	22	11
	crossing of an abandoned farm	0	1
	crossing of a forest	5	4
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	14.7	18.45
3	degree of interaction of all wetlands with ground water		
	crossing of high	1	2
	encroachment on high	2	1
	crossing of moderate	1	1
	encroachment on moderate	3	3
	crossing of low	2	1
	encroachment of low	1	0
4	encroachment on or severance of wetlands		
	number of wetland crossings (PSW and local)	5	7
	area of encroachment (ha) – PSW and local wetlands	14.6	25.55
	number of wetland (PSW and local) encroachments	9	16

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 3

INTERSECTION 11 – 13		RAW DATA	
EVALUATION CRITERIA		D2A/E1	D2D/E1
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	62	74.95
	number of forest crossings	14	17
	crossings of forests >400 ha	2	2
	crossings of forests 100–400 ha	0	0
	crossings of forests 40–100 ha	1	3
	crossings of forests 0–40 ha	4	12
	old growth forest crossed	0	0
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	3.3	6.2
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	4	3
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	38	32
	regionally significant vegetation	5	4
8	presence of riparian habitat (forested)		
	1st and 2nd order streams, permeable soils	1	1
	3rd order streams, permeable soils	0	0
	> 3rd order streams, permeable soils	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	92.5	112.4
2	shallow ground water table (ha)	14.7	18.45
3	permit to take water (ground water)	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	D2A/E1	D2D/E1
1 Potential to displace existing residences	a) Number of residences displaced	10 Same	11 Same
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	67 Higher	50 Lower
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	4 Snowmobile, 1 Reg. Forest Same	4 Snowmobile, 1 Reg. Forest Same
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	High	Moderate-High
6 Potential impacts to community stability	a) Potential effect on community stability	High	High
7 Potential impacts to community character	a) Potential effect on community character	Mod	Moderate-Low
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected b) Police - % increase in response time/number of households Total number of households affected c) Ambulance - % increase in response time/number of households Total number of households affected	41/7 46/13 40/13 32/8 41 20/5 34/7 22/12 9/1 21/13 13/13 12/8 59 6/5 31/7 15/12 41/7 46/13 40/13 32/8 65 Higher	9/2 17/6 41/7 46/13 40/13 32/8 49 9/1 21/13 13/13 13/13 12/8 35 41/7 46/13 40/13 32/8 41 Lower
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0	0 0
10 Potential to impact future development	a) Consistency with official plan boundaries	Outside Boundary Same	Outside Boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	8 3.9 1.4 3.5 3.6 3.5 3.2 3.1 3.1 9 0 7 13 8 13 13 8 71 Higher	7 1.4 1.4 3.5 3.3 3.2 3.1 3.1 2 0 6 8 13 13 8 50 Lower
TOTAL		1	2
D2A/E1 results in higher impacts than D2D/E1. Especially in community cohesion and community character. Both alternatives produce high impact to community mobility			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	D2A/E1	D2D/E1
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	59	48
	b) Number of cluster residential areas exposed to the highway	0	1
	c) Number of residences affected within each clustered area	0	8
		Higher	Lower
TOTAL		2	2
Both alternatives generate similar impacts.			

3.3 NOISE

(Weight = 30)

INDICATOR		D2D/E1				D2A/E1			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	9	16	5	3	18	11	4	2
	51-55 dBA		2						
	56-60 dBA								
	61-65 dBA								
	66-70 dBA								
TOTAL		2				2			
Both alternatives result in similar impacts, but D2D/E1 results in a slightly higher impacts.									

TABLE 7: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 3 (PART2)

Intersection Points ----->			
EVALUATION CRITERIA		D2A/E1 Raw Score	D2D/E1 Raw Score
A) FARM OPERATION UNITS (numbers)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	4	3
	• displacement of medium value farm	3	0
	• displacement of low value farm	7	7
2)	Orientation of the severance		
	• diagonal severances	2	4
	• horizontal or vertical severance	20	17.5
	• severance along property boundary	17	16.5
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	5	7
	• isolation of between 25% to 50% of fields	3	4
	• isolation of less than 25% of the working fields	13.5	7
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	0
	• continuous or mixed system	192.7	186.7
	• pasture or grazing system	14.25	5.87
2)	Displacement of soils with capability for agriculture		
	• Organics	5	32
	• Class 1,2	215	186
	• Class 3,4	60	86
	• Class 5,6 and 7	7	11
C) LINKED FARMING OPERATIONS (numbers)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	2	2
	• isolation of less than 25% of the working fields	1	0

4.2 COMMERCIAL INDUSTRIAL

(Weight = 20)

INDICATOR	MEASURE	D2A/E1	D2D/E1
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	1
	b) Number of jobs affected	0	0
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0
	b) Number of industrial businesses displaced	0	1
	c) Number of aggregate operations displaced	0	0
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	0	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0	0
TOTAL		4	3
No Impacts with D2A/E1, low impacts with D2D/E1			

EVALUATION CRITERIA - D2D/E1 vs D2A/E1

5. Cultural Environment	5.1 Archaeology	Indicator	D2D/E1	D2A/E1			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 0	0 6 0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	L	M			
		c) amount of land within 200 m of water	M	H			
		Archaeological potential (high/med/low)	L	H			

		Score (0-4)	3	1			
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ROUTE COMPARISON BY TRADE-OFF METHOD - D2D/E1 vs D2A/E1

FACTOR	D2D/E1	D2A/E1	COMMENT
5.1 a) Number of registered sites directly impacted	<input checked="" type="radio"/>	<input type="radio"/>	
b) Amount of land within 500 m of beach ridge	<input checked="" type="radio"/>	<input type="radio"/>	
c) Amount of land within 200 m of water	<input checked="" type="radio"/>	<input type="radio"/>	

Prefer D2d/E1 because it has a much lower archaeological potential than D2A/E1

Route Segments: D2D/E1 and D2A/E1

Cultural landscapes displaced	D2D/E1		D2A/E1
	6 roadscapes	8 roadscapes	
	12 farm complexes		15 farm complexes
	Lot 17 Con 1 T		Lot 9 Con 9 T
	Lot 10 Con 1 T		Lot 9 Con 8 T
	Lot 8 Con 5 T		Lot 8 Con 5 T
	Lot 8 Con 5 T		Lot 9 Con 5 T
	Lot 9 Con 8 T		Lot 9 Con 4 T
	Lot 9 Con 9 T		Lot 9 Con 1 T
	Lot 9 Con 4 T		Lot 13 Con 14 B
	Lot 2 Con 13 B		Lot 14 Con 13 B
	Lot 3 Con 12 B		Lot 12 Con 12 B
	Lot 2 Con 12 B		Lot 10 Con 12 B
	Lot 7 Con 35 Ux		Lot 6 Con 10 B
	Lot 7 Con 33 Ux		Lot 6 Con 9 B
			Lot 10 Con 11 B
			Lot 33 Con 7 UX
			Lot 35 Con 7 Ux
Cultural landscapes disrupted	24 farm complexes		30 farm complexes
	Lot 5 Con 14 B		Lot 8-9 Con 9 T
	Lot 16 Con 1 T		Lot 10 Con 9 T
	Lot 15 Con 1 T		Lot 8 Con 8 T
	Lot 9/10 Con 14 B		Lot 9 Con 8 T
	Lot 11 Con 14 T		Lot 9 Con 7 T
	Lot 14 Con 1 T		Lot 9 Con 3 T
	Lot 13 Con 1 T		Lot 10 Con 1 T
	Lot 12 Con 1 T		Lot 9 Con 1 T
	Lot 9 Con 1 T		Lot 15-16 Con 4 B
	Lot 9 Con 1 T		Lot 14 Con 14 B
	Lot 9 Con 3 T		Lot 15 Con 14 B
	Lot 9 Con 7 T		Lot 13 Con 13 B
	Lot 9 Con 8 T		Lot 13 Con 12 B
	Lot 8 Con 8 T		Lot 12 Con 12 B
	Lot 8/9 Con 9 T		Lot 11 Con 11 B
	Lot 10 Con 9 T		Lot 9 Con 12 B

Route Segments: D2D/E1 and D2A E1

Cultural Landscapes disrupted	D2D/E1		D2A/E1
	farm complexes	farm complexes	
	Lot 3 Con 13 B		
	Lot 3 Con 13 B		Lot 10 Con 11 B
	Lot 2 Con 12 B		Lot 8 Con 11 B
	Lot 2 Con 11 B		Lot 6 Con 11 B
	Lot 12 Con 10 B		Lot 6 Con 11 B
	Lot 12 Con 9 B		Lot 7 Con 10 B
	Lot 24 Con 2 G		Lot 4-5 Con 10 B
	Lot 34 Con 7 Ux		Lot 5 Con 10 B
			Lot 5 Con 9 B
			Lot 5 Con 9 B
			Lot 4 Con 9 B
			Lot 4 Con 9 B
			Lot 2 Con 9 B
			Lot 24 Con 2 G
			Lot 34 Con 7 Ux
	6 roadscares		6 roadscares
	2 cemeteries		1 cemetery
	Lot 9 con 4 B (42-198)		Lot 9 Con 4 T 42-198
	Lot 2 Con 11 B (3-209)		
	2 historical settlements (Wilfrid, Udora)		1 historical settlement (Udora)
Associated built heritage features	42-198 disrupted Lot 9 Con 4 T		3-313 displaced Lot 6 Con 10 B
	3-209 disrupted Lot 2 Con 11 B		38-214 displaced Lot 13 Con 14 B
			42-198 disrupted Lot 9 Con 4 T
			38-215 disrupted Lot 14 Con 14 B
			38-270 disrupted Lot 12 Con 12 B
			3-255 disrupted Lot 5 Con 10 B
			3-210 disrupted Lot 4 Con 9 B
			3-211 disrupted Lot 5 Con 9 B

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred B1 (B1A vs B1B)

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

B1A VS B1B - SUMMARY

8/16/96

1.1 TRAFFIC OPERATIONS

INDICATOR	MEASURE	B1A		B1B	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	<i>7200</i>	Same	<i>7200</i>	Same
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	<i>1.5</i>	Same	<i>1.4</i>	Same
		6		6	

Both routes provide a moderate benefit to traffic operations.

1.2 NETWORK COMPATIBILITY

INDICATOR	MEASURE	B1A		B1B	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>N/A</i>	N/A	<i>N/A</i>	N/A
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>N/A</i>	N/A	<i>N/A</i>	N/A
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	<i>3</i>	Same	<i>3</i>	Same
h) Ability to stage implementation of the undertaking	Subjective assessment	<i>N/A</i>	N/A	<i>N/A</i>	N/A
i) Ability to upgrade undertaking as warranted by future needs	Subjective assessment	<i>Good</i>	Same	<i>Good</i>	Same
		6		6	

Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes.

Both routes provide a moderate benefit to network compatibility.

1.3 COST

INDICATOR	MEASURE	B1A		B1B	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Lower	<i>1.33</i>	Higher
b) Operating cost	Comparative Ratio (Lowest = 1.0)	<i>1.10</i>	Same	<i>1.00</i>	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	<i>1.00</i>	Lower	<i>1.36</i>	Higher
		3		2	

B1B has higher costs than B1A because B1B requires additional structures over wetlands.

B1A has a low cost impact and B1B has a moderate cost impact.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 2

INTERSECTION 3 – 5		RAW DATA	
EVALUATION CRITERIA		B1A	B1B
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species, and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings – non-permanent flow	3	4
	number of water crossings – permanent flow		
	1st and 2nd order – high permeable soils	1	0
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	0	1
	>3rd order – low permeable soils	1	0
	number of encroachments – non-permanent flow (<300 m)	2	3
	encroachment on Lake Simcoe (1–2 km)	0	0
	number of encroachments – permanent flow		
	(distance from watercourse <300 m)		
	1st and 2nd order – high permeable soils	0	1
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	0	1
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat – spawning	0	1
	area of critical fish habitat – migratory route	0	1
5	presence of warmwater/coldwater communities		
	presence of sensitive communities	0	0
	brook trout	0	0
	sculpin	0	0
	walleye		
	presence of significant communities		
	pike	0	1
	bass	0	0
	sunfish, minnows	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	area of forest (adjacent to wetlands) lost (ha)	20.13	12.63
2	encroachment on or severance of greenways and open space linkages		
	local greenspace crossings	2	1
	regional wildlife corridor	0	0
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	1	0
	route > 1 km of heronry	0	1
	number of habitats supporting indicator species	3	3
4	presence of species at risk		
	regionally rare species	0	2
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	2	4
	number of marshes/wet swamps crossed	1	3
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	2	3
	crossing of an abandoned farm	0	0
	crossing of a forest	2	2
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	4.6	4.5
3	degree of interaction of all wetlands with ground water		
	crossing of high	2	3
	encroachment on high	1	2
	crossing of moderate	0	0
	encroachment on moderate	0	0
	crossing of low	0	1
	encroachment of low	0	2
4	encroachment on or severance of wetlands		
	number of wetland crossings (PSW and local)	2	4
	area of encroachment (ha) – PSW and local wetlands	6.8	17.7
	number of wetland (PSW and local) encroachments	5	12

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 2

INTERSECTION 3 – 5		RAW DATA	
EVALUATION CRITERIA		B1A	B1B
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	20.13	12.63
	number of forest crossings	6	4
	crossings of forests >400 ha	0	0
	crossings of forests 100–400 ha	1	1
	crossings of forests 40–100 ha	0	0
	crossings of forests 0–40 ha	3	2
	old growth forest crossed	1	0
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	1.4	1.6
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	0	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	10	4
	regionally significant vegetation	4	2
8	presence of riparian habitat (forested)		
	1st and 2nd order streams, permeable soils	1	0
	3rd order streams, permeable soils	0	1
	> 3rd order streams, permeable soils	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	12.35	48.25
2	shallow ground water table (ha)	4.6	4.5
3	permit to take water (ground water)	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	B1B	B1A
1 Potential to displace existing residences	a) Number of residences displaced	12 Higher	11 Lower
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	24 Higher	19 Lower
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property not enough to warrant displacement)	a) Number/type disrupted	1/snowmobile Same	1/snowmobile Same
5 Potential impacts to community	a) Potential effect on community cohesion	Low Same	Low Same
6 Potential impacts to community	a) Potential effect on community stability	Mod Lower	High Higher
7 Potential impacts to community	a) Potential effect on community character	Mod Same	Mod Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected	0 0	0 0
	b) Police - % increase in response time/number of households Total number of households affected	0 0	0 0
	c) Ambulance - % increase in response time/number of households Total number of households affected	0 0 Same	0 0 Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0 Same	0 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	Outside Boundary Same	Outside Boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	1 2 8 8 Same	1 2 8 8 Same
TOTAL		3	3
B1B displace and disrupts slightly more residences than B1A. The significant difference in effects on community character outweigh the impacts. Therefore, B1B is preferred.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	B1B	B1A
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	12	17
	b) Number of cluster residential areas exposed to the highway	0	0
	c) Number of residences affected within each clustered area	0	0
		Lower	Higher
TOTAL		2	2
B1A visually impacts more residents.			

3.3 NOISE

(Weight = 30)

INDICATOR		BIB				BIA			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA		9	5	1		3	4	3
	51-55 dBA						2		
	56-60 dBA	1							
	61-65 dBA								
	66-70 dBA								
TOTAL		2				2			
The alternatives generate similar moderate noise impacts.									

TABLE 5A: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 2

Intersection Points----->			
EVALUATION CRITERIA		B1B	B1A
		Raw Score	Raw Score
A) FARM OPERATION UNITS (numbers)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	1	0
	• displacement of medium value farm	0	0
	• displacement of low value farm	6	7
2)	Orientation of the severance		
	• diagonal severances	2	3
	• horizontal or vertical severance	4.3	1
	• severance along property boundary	5	6
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	1	3
	• isolation of between 25% to 50% of fields	1	0
	• isolation of less than 25% of the working fields	5	3
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	0
	• continuous or mixed system	72.5	81.4
	• pasture or grazing system	8.75	2.5
2)	Displacement of soils with capability for agriculture		
	• Organics	25	7
	• Class 1,2	25	75
	• Class 3,4	7	16
	• Class 5,6 and 7	0	0
C) LINKED FARMING OPERATIONS (numbers)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	0	0
	• isolation of less than 25% of the working fields	1	1

4.2 COMMERCIAL INDUSTRIAL*(Weight = 20)*

INDICATOR	MEASURE	B1B	B1A
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0
	b) Number of jobs affected	0	0
		Same	Same
2 (partial property taking)	a) Number of tourism businesses disrupted	0	0
		Same	Same
3 commercial/industrial businesses	a) Number of commercial businesses	1	1
	b) Number of industrial businesses displaced	0	0
	c) Number of aggregate operations displaced	0	0
		Same	Same
4 commercial/industrial businesses	a) Number of commercial businesses	0	0
	b) Number of industrial businesses disrupted	1	1
	c) Number of aggregate operations disrupted	0	0
		Same	Same
TOTAL		3	3
Both alternatives affect the same business which results in a minor impact.			
Weighted Score			

EVALUATION CRITERIA - B1B vs B1A

5. Cultural Environment	5.1 Archaeology	Indicator	B1B	B1A			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C = 1)	0 0 0	0 0 0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	L			
		c) amount of land within 200 m of water	H	L			
		Archaeological potential (high/med/low)	H	M			

		Score (0-4)	2	3			
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ROUTE COMPARISON BY TRADE-OFF METHOD - B1B vs B1A

FACTOR	B1B		B1A	COMMENT
5.1 a) Number of registered sites directly impacted	<input type="radio"/>		<input checked="" type="radio"/>	No registered sites for B1B or B1A but B1A has less archaeological potential
b) Amount of land within 500 m of beach ridge	<input type="radio"/>		<input checked="" type="radio"/>	B1A traverses upland area unlike B1B which follows the beach ridge edge
c) Amount of land within 200 m of water	<input type="radio"/>		<input checked="" type="radio"/>	B1A has very few water crossings and follows dry upland area

Prefer B1A

Route Segments: B1A and B1B

Cultural landscapes displaced	B1A		B1B	
	4 roadscares		4 roadscares	
	4 farm complexes		5 farm complexes	
	Lot 34 Con 3 EG		Lot 34 Con 3 EG	
	Lot 34 Con 4 EG		Lot 2 Con 4 G/NG	
	Lot 3 Con 5 G/NG		Lot 5 Con 5 G/NG	
	Lot 4 Con 6 G/NG		Lot 5 Con 5 G/NG	
			Lot 5 Con 6 G/NG	
Cultural landscapes disrupted	14 farm complexes		13 farm complexes	
	Lot 30 Con 3 EG		Lot 30 Con 3 EG	
	Lot 31 Con 3 EG		Lot 31 Con 3 EG	
	Lot 31 Con 3 EG		Lot 31 Con 3 EG	
	Lot 32 Con 3 EG		Lot 32 Con 3 EG	
	Lot 32 Con 3 EG		Lot 32 Con 3 EG	
	Lot 33 Con 3 EG		Lot 33 Con 3 EG	
	Lot 35 Con 3 EG		Lot 35 Con 3 EG	
	Lot 32 Con 4 EG		Lot 3 Con 3 G/NG	
	Lot 32 Con 4 EG		Lot 5 Con 4 G/NG	
	Lot 35 Con 4 EG		Lot 5 Con 4 G/NG	
	Lot 35 Con 5 EG		Lot 6 Con 5 G/NG	
	Lot 5 Con 5 G/NG		Lot 6 Con 5 G/NG	
	Lot 5 Con 5 G/NG		Lot 4 Con 6 G/NG	
	Lot 5 Con 6 G/NG			
	1 roadscape		1 roadscape	
			1 historical settlement (Mt. Pleasant)	
Associated built heritage features	12-172 disrupted (Lot 5, Con 5)		12-172 displaced (Lot 5, Con 5)	
	12-180 disrupted (Lot 5, Con 5)		12-180 displaced (Lot 5, Con 5)	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred B3 (B3A vs. B3B)

B3A VS B3B Summary

1.1 TRAFFIC OPERATIONS (Weight = 40)

INDICATOR	MEASURE	B3A		B3B	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	5700	Lower	7200	Higher
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Lower	<i>Good</i>	Higher
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	1.5	Same	1.4	Same
TOTAL		5		7	

Route B3B serves a significantly higher design hour volume than B3A.

B3B has high traffic operations benefits and B3A has low benefits.

1.2 NETWORK COMPATIBILITY (Weight = 40)

INDICATOR	MEASURE	B3A		B3B	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>Mod +</i>	Lower	<i>High +</i>	Higher
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	<i>Mod +</i>	Lower	<i>High +</i>	Higher
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	2	Same	2	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	N/A	N/A	N/A	N/A
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
TOTAL		6		7	

B3B creates a greater benefit to traffic volumes and operations on Woodbine Avenue, while route B3A creates a greater benefit to traffic volumes on Kennedy Road, which is not as significant to the roadway network. Staging abilities cannot be appropriately assessed for these minor route segments.

B3B produces high benefits to Network Compatibility and B3A produces moderate benefits.

1.3 COST (Weight = 20)

INDICATOR	MEASURE	B3A		B3B	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.00	Same	1.16	Same
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.00	Same	1.03	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.00	Lower	1.19	Higher
TOTAL		3		3	

B3B has slightly higher costs than B3A due to greater route length and additional structures required.

Both routes have low cost impacts, with B3A having slightly lower impacts.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 4 - 6		RAW DATA	
EVALUATION CRITERIA		B3A	B3B
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings - non-permanent flow	5	3
	number of water crossings - permanent flow		
	1st and 2nd order - high permeable soils	1	1
	1st and 2nd order - low permeable soils	0	0
	>3rd order - high permeable soils	0	0
	>3rd order - low permeable soils	0	0
	number of encroachments - non-permanent flow (< 300 m)	2	2
	encroachment on Lake Simcoe (1-2 km)	0	0
	number of encroachments - permanent flow		
	(distance from watercourse <300 m)		
	1st and 2nd order - high permeable soils	0	0
	1st and 2nd order - low permeable soils	0	0
	>3rd order - high permeable soils	0	0
	>3rd order - low permeable soils	0	0
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat - spawning	1	1
	area of critical fish habitat - migratory route	0	0
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	0
	walleye	0	0
	sculpin	0	0
	presence of significant communities		
	pike	1	1
	bass	0	0
	sunfish	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	information collected as part of 2.4 (1)	18.9	12.9
2	encroachment on or severance of greenways and open space linkages		
	local	2	1
	regional	0	0
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	1	1
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	2	2
4	presence of species at risk		
	regionally rare species	1	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	2	2
	number of marshes/wet swamps crossed	1	0
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	8	3
	crossing of an abandoned farm	0	0
	crossing of a forest	2	0
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	7.1	4.9
3	degree of interaction of all wetlands with ground water		
	crossing of high	1	1
	encroachment on high	1	1
	crossing of moderate	0	0
	encroachment on moderate	0	0
4	encroachment on or severance of wetlands		
	number of wetland (PSW and local) crossings	3	1
	area of encroachment (ha) - PSW and local wetlands	11.2	10.2
	number of wetland (PSW and local) encroachments	8	3

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 4 - 6		RAW DATA	
EVALUATION CRITERIA		B3A	B3B
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	18.9	12.9
	number of forest crossings	7	6
	crossings of forests >400 ha	0	0
	crossings of forests 100-400 ha	1	1
	crossings of forests 40-100 ha	1	1
	crossings of forests 0-40 ha	3	2
	old growth forest crossed	0	1
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	0	0
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	0	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	3	8
	regionally significant vegetation	0	2
8	presence of riparian habitat		
	forested riparian habitat - 1st and 2nd order streams	0	0
	forested riparian habitat - 3rd order streams	0	1
	forested riparian habitat - > 3rd order streams	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge - highly permeable soil and susceptibility to contamination (ha)	86.2	81.9
2	shallow ground water table (ha)	7.1	4.9
3	permit to take water	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS (Weight = 60)

INDICATOR	MEASURE	B3A	B3B
1 Potential to displace existing residences	a) Number of residences displaced	13 Higher	11 Lower
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not warrant displacement	30 Lower	35+1 Pollock sub Higher
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	0 Same	0 Same
5 Potential impact to community cohesion	a) Potential effect on community cohesion	low Same	low Same
6 Potential impact to community	a) Potential effect on community stability	high Higher	moderate Lower
7 Potential impact to community character	a) Potential effect on community character	moderate Same	moderate Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected	0 0	0 0
	b) Police - % increase in response time/number of households Total number of households affected	0 0	0 0
	c) Ambulance - % increase in response time/number of households Total number of households affected	0 0	0 0
		Same	Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of	0 0 Same	0 (1 Pollock sub.) 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	outside boundary Same	outside boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	0 0 0 0 Same	0 0 0 0 Same
TOTAL		1	2
B3A displaces more residences and has a higher potential effect on community stability (both high importance indicator). B3B disrupts more residences (a moderate importance indicator). Therefore B3B has less overall impact on community effects.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR		MEASURE	B3A	B3B
1	Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	4	4
		b) Number of clustered residential areas exposed to the highway	1	0
		c) Number of residences affected within each clustered area	9	0
			Higher	Lower
TOTAL			1	3
B3A impacts more residences.				

3.3 NOISE

(Weight = 30)

INDICATOR		B3A				B3B			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	7	6	7		1	5	2	
	51-55 dBA	2							
	56-60 dBA								
	61-65 dBA								
	66-70 dBA								
TOTAL		2				3			
B3A impacts more than twice as many residences than B3B and most of the these impacts are more severe than the impacts associated with B3B.									

TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1

Intersection Points ----->

		4 – 6	
		B3A	B3B
		Raw Score	Raw Score
EVALUATION CRITERIA			
A) FARM OPERATION UNITS (number of each)			
1)	Displacement of Capital Value (e.g. farm complex)		0
	• displacement of high value farm		0
	• displacement of medium value farm		3
	• displacement of low value farm		
2)	Orientation of the severance		0
	• diagonal severances	1	
	• horizontal or vertical severance	10	7
	• severance along property boundary	3	10
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	1	1
	• isolation of between 25% to 50% of fields	4	0
	• isolation of less than 25% of the working fields	7	8
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	5.2
	• continuous or mixed system	78.87	70.62
	• pasture or grazing system	9.62	9.4
2)	Displacement of soils with capability for agriculture		
	• Organics	7	0
	• Class 1,2	32	39
	• Class 3,4	62	60
	• Class 5,6 and 7	0	0
C) LINKED FARMING OPERATIONS (number of each)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	0	0
	• isolation of less than 25% of the working fields	0	0

4.2 COMMERCIAL INDUSTRIAL (Weight = 20)

INDICATOR	MEASURE	B3A	B3B
1 Potential to displace tourism	a) Number of tourism businesses	0	0
	b) Number of jobs affected	0	0
		Same	Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0
		Same	Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0
	b) Number of industrial businesses displaced	0	0
	c) Number of aggregate operations displaced	0	0
		Same	Same
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	0	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0	0
		Same	Same
TOTAL		4	4
No Impacts.			
Weighted Score			

EVALUATION CRITERIA - B3A vs B3B

5. Cultural Environment	5.1 Archaeology	Indicator	B3A	B3B			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 0	0 2 0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	L			
		c) amount of land within 200 m of water	L	H			
		Archaeological potential (high/med/low)	M	H			

		Score (0-4)	3	2			
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ROUTE COMPARISON BY TRADE-OFF METHOD - B3A vs B3B

FACTOR	B3A	B3B	COMMENT
5.1 a) Number of registered sites directly impacted	<input checked="" type="radio"/>	<input type="radio"/>	Paleo-Indian site on B3B - should avoid
b) Amount of land within 500 m of beach ridge	<input type="radio"/>	<input checked="" type="radio"/>	
c) Amount of land within 200 m of water	<input checked="" type="radio"/>	<input type="radio"/>	Maskinonge River near B3B

Prefer B3A

Route Segments: B3A and B3B

Cultural landscapes displaced	B3A		B3B	
	1 roadscapes		1 roadscapes	
	farm complexes		farm complexes	
	Lot 6 Con 5 (See 12-80)		Lot 5 Con 4 G/NG	
	Lot 12 Con 6 G/NG		Lot 6 Con 4 G/NG	
	Lot 19 Con 7 G/NG		Lot 12/13 Con 4 G/NG	
			Lot 19 Con 7 G/NG	
			Lot 14 Con 6 G/NG	
Cultural landscapes disrupted	farm complexes		farm complexes	
	Lot 5 Con 4 G/NG		Lot 5 Con 4 G/NG	
	Lot 5 Con 4 G/NG		Lot 16 Con 6 G/NG	
	Lot 5 Con 5 G/NG			
	Lot 8 Con 5 G/NG		Lot 11/12 Con 4 G/NG	
	Lot 9 Con 5 G/NG		Lot 12 Con 5 G/NG	
	Lot 10 Con 5 G/NG			
	Lot 12/13 Con 5 G/NG		Lot 12/13 Con 5 G/NG	
			Lot 14 Con 4 G/NG	
	Lot 12 Con 6 G/NG		Lot 15 Con 5 G/NG	
	Lot 13 Con 6 G/NG		Lot 14 Con 5 G/NG	
	Lot 16 Con 6 G/NG		Lot 12 Con 6 G/NG	
	Lot 18 Con 7 G/NG		Lot 13 Con 6 G/NG	
			Lot 18 Con 7 G/NG	
Associated built heritage features	1 12-80, displaced		2 12-179, disruption 29-166, disruption	

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred D/E1

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

8/16/96

Pt. 11 to Pt. 13 - SUMMARY

1.1 TRAFFIC OPERATIONS								
INDICATOR	MEASURE	D1/E1		D2A/E1		D2B/E1		
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Low	Same	Low	Same	Low	Same	
e) Design hour volume (forecast)	# of Vehicles	3300	Same	3300	Same	3300	Same	
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	3.1	Same	3.0	Same	3.1	Same	
		6		6		6		
No significant differences were found among the route route alternatives.								
All routes provide a moderate benefit to traffic operations.								
1.2 NETWORK COMPATIBILITY								
INDICATOR	MEASURE	D1/E1		D2A/E1		D2B/E1		
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Mod +	Same	Mod +	Same	Mod +	Same	
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Mod +	Same	Mod +	Same	Mod +	Same	
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same	Good	Same	
g) Length of construction period	Years (Minimum)	7	Same	7	Same	7	Same	
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	Good	Same	Fair	Same	Fair	Same	
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Good	Same	Good	Same	Good	Same	
		6		6		6		
D1/E1 has a better staging ability because it can provide an additional interim terminus at a provincial highway (Highway 7). Overall, the routes have the same benefits to network compatability.								
All routes provide a moderate benefit to network compatability.								
1.3 COST								
INDICATOR	MEASURE	D1/E1		D2A/E1		D2B/E1		
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.08	Same	1.00	Same	1.01	Same	
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.11	2nd	1.00	1st	1.07	1st	
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.10	Same	1.02	Same	1.00	Same	
		3		3		3		
D1/E1 has a slightly higher operating cost because it is longer than the other two alternatives. Overall, the routes have the same cost impacts.								
All routes have a low cost impact.								

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 2
(USING D2A S ALTERNATIVE)**

INTERSECTION 11 – 13		RAW DATA		
EVALUATION CRITERIA		D1/E1	D2A/E1	D2B/E1
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species, and aquatic habitat				
1	water crossings or encroachments by stream order			
	number of water crossings – non-permanent flow	3	3	1
	number of water crossings – permanent flow			
	1st and 2nd order – high permeable soils	2	2	3
	1st and 2nd order – low permeable soils	6	3	2
	>3rd order – high permeable soils	0	0	0
	>3rd order – low permeable soils	2	2	2
	number of encroachments – non-permanent flow (<300 m)	1	2	2
	encroachment on Lake Simcoe (1 – 2 km)	0	0	0
	number of encroachments – permanent flow			
	(distance from watercourse <300 m)			
	1st and 2nd order – high permeable soils	1	1	1
	1st and 2nd order – low permeable soils	1	0	1
	>3rd order – high permeable soils	0	0	0
	>3rd order – low permeable soils	0	1	1
2	permitted surface water intakes affected	0	0	0
3	presence of species at risk			
	endangered	0	0	0
	threatened	0	0	0
	vulnerable	0	0	0
4	areas of critical fish habitat			
	area of critical fish habitat – spawning	2	3	3
	area of critical fish habitat – migratory route	2	2	2
5	presence of warmwater/coldwater communities			
	presence of sensitive communities			
	brook trout	0	1	1
	sculpin	0	2	2
	walleye	0	0	0
	presence of significant communities			
	pike	0	0	0
	bass	1	2	2
	sunfish, minnows	1	1	1
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat				
1	encroachment on or severance of forested vegetation or non-forested successional areas			
	area of forest (adjacent to wetlands) lost (ha)	57.3	62	85.8
2	encroachment on or severance of greenways and open space linkages			
	local greenspace crossings	5	4	4
	regional wildlife corridor	1	1	1
3	encroachment on or severance of significant wildlife habitat			
	route within 300 m of heronry	0	0	0
	route within 1 km of heronry	0	0	1
	route > 1 km of heronry	1	1	0
	number of habitats supporting indicator species	2	2	2
4	presence of species at risk			
	regionally rare species	1	1	1
2.3 WETLANDS: examines the impact each alternative will have on wetland resources				
1	loss of function of all wetlands withing or adjacent to study area			
	number of swamps crossed	11	11	10
	number of marshes/wet swamps crossed	2	4	1
	number of fens/bogs crossed	0	0	0
	adjacent land use			
	crossing of an active farm	14	22	14
	crossing of an abandoned farm	0	0	0
	crossing of a forest	6	5	6
2	loss of wetland area of all wetlands within study area			
	area of wetland (PSW and local) lost due to crossing (ha)	23.5	14.7	17.2
3	degree of interaction of all wetlands with ground water			
	crossing of high	1	1	0
	encroachment on high	2	2	0
	crossing of moderate	1	1	3
	encroachment on moderate	1	3	3
	crossing of low	3	2	1
	encroachment of low	2	1	1
4	encroachment on or severance of wetlands			
	number of wetland crossings (PSW and local)	7	5	5
	area of encroachment (ha) – PSW and local wetlands	28.5	14.6	32.6
	number of wetland (PSW and local) encroachments	16	9	16

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 2
(USING D2A S ALTERNATIVE)

INTERSECTION 11 - 13		RAW DATA		
EVALUATION CRITERIA		D1/E1	D2A/E1	D2B/E1
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens				
1	encroachment on or severance of high quality forest			
	area of forest lost due to crossing (ha)	57.25	62	85.81
	number of forest crossings	14	14	19
	crossings of forests > 400 ha	1	2	2
	crossings of forests 100-400 ha	2	0	0
	crossings of forests 40-100 ha	2	1	1
	crossings of forests 0-40 ha	6	4	11
	old growth forest crossed	0	0	0
2	encroachment on or severance of Life Science ANSI's			
	area of ANSI's (outside wetlands) lost due to crossing	0	0	0
3	encroachment on or severance of ESA's			
	area of ESA's (outside wetlands) lost due to crossing	3.13	0	0
4	encroachment on or severance of regional forest			
	area of forest (outside wetlands) lost due to crossing	7.9	3.3	6.2
5	presence of significant species or specimens at risk			
	regionally significant species	0	0	0
	locally significant species	5	4	3
6	encroachment or severance of unusual vegetation units			
	locally significant vegetation	38	38	43
	regionally significant vegetation	6	5	6
8	presence of riparian habitat (forested)			
	1st and 2nd order streams, permeable soils	2	1	1
	3rd order streams, permeable soils	0	0	0
	> 3rd order streams, permeable soils	0	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply				
1	ground water recharge - highly permeable soil and susceptibility to contamination (ha)	74.5	79.8	79.4
2	shallow ground water table (ha)	23.53	14.7	17.15
3	permit to take water (ground water)	0	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms				
1	encroachment on or severance of Earth Science ANSI's	0	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	D1\E1	D2A\E1 (with D2A South)	D2B\E1
1 Potential to displace existing residences	a) Number of residences displaced	18 Second	10 First	17 Second
2 Potential to disrupt existing properties	a) Number of properties that will experience some property loss but not enough to warrant displacement	63 First	67 Second	68 Third
3 Potential to displace institutional and	a) Number/type displaced	0 No Impact	0 No Impact	0 No Impact
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	1 School 5 Snowmobile Second	4 Snowmobile First	4 Snowmobile First
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	High Same	High Same	High Same
6 Potential impacts to community stability	a) Potential effect on community stability	High Same	High Same	High Same
7 Potential impacts to community character	a) Potential effect on community character	Mod Same	Mod Same	Mod Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households	42/1 41/7 46/13 40/13 32/8	41/7 46/13 40 /13 32/8	9/2 41/7 46/1 3 40/13 32/8
	Total number of households affected	42	41	43
	b) Police - % increase in response time/number of households	42/1 19/4 34/7 22/12 41/7 21/1 3 13/13 12/8	20/5 34/7 22/ 12 9/1 21/13 13/13 12/8	34/7 22/12 9/ 1 21/13 13/13 12/8
	Total number of households affected	65	59	54
	c) Ambulance - % increase in response time/number of households	25/4 31/7 15/12 41/7 46/13 40/ 13 32/8	6/5 31/7 15/1 2 41/7 46/13 40/13 32/8	31/7 15/12 41 /7 46/13 40/1 3 32/8
	Total number of households affected	64 First	52 Third	60 Second
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced	0	0	0
	b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 Same	0 Same	0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	Outside Boundary Same	Outside Boundary Same	Outside Boundary Same
11 Potential reduction in community mobility	a) Number of road closings	10	8	8
	b) Length of road affected	1.5 1.5 2.4 2.4 3. 5 3.5 3.5 3.2 3.1 3.1	3.9 1.4 3.5 3.6 3.5 3.2 3.1 3. 1	1.4 1.4 3.6 3.5 3.5 3.2 3.1 3. 1
	c) Number of residences affected	4 0 0 4 7 12 8 13 13 8	9 0 7 13 8 13 13 8	2 0 7 13 8 13 13 8
	Total number of residences affected	69 First	71 Second	64 Third
TOTAL		2	2	2

Since all alternatives split Brock Township into a northern and southern area an result in similar physical impacts, the overall community effects are considered equal.

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	D1/E1	D2A/E1	D2B/E1
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	58	59	71
	b) Number of cluster residential areas exposed to the highway	0	0	1
	c) Number of residences affected within each clustered area	0	0	8
		First	First	Second
TOTAL		2	2	2
All alternatives visually affect a similar number of residences, with D2B/E1 having slightly greater impacts.				

3.3 NOISE

(Weight = 30)

INDICATOR		D1/E1				D2A/E1				D2B/E1			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA	16	15	9		18	11	4	2	17	24	8	3
	51-55 dBA	2	2										
	56-60 dBA	1	1										
	61-65 dBA												
66-70 dBA													
TOTAL		2				3				2			
D2A/E1 results in fewer impacts than the other alternatives D1/E1 and D2B/E1 result in similar impacts.													

TABLE 6: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 3

Intersection Points----->			
EVALUATION CRITERIA			
D1/E1		D2A/E1	
Raw Score		Raw Score	
D2B/E1		Raw Score	
3		4	
5		3	
9		7	
1		2	
23.5		20	
18.5		17	
7		5	
6		3	
7		13.5	
0		0	
242.5		192.7	
12		14.25	
63		5	
219		215	
48		60	
7		7	
0		0	
0		2	
3		1	

Intersection Points----->			
EVALUATION CRITERIA			
A) FARM OPERATION UNITS (numbers)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm		
	• displacement of medium value farm		
	• displacement of low value farm		
2)	Orientation of the severance		
	• diagonal severances		
	• horizontal or vertical severance		
	• severance along property boundary		
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields		
	• isolation of between 25% to 50% of fields		
	• isolation of less than 25% of the working fields		
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops		
	• continuous or mixed system		
	• pasture or grazing system		
2)	Displacement of soils with capability for agriculture		
	• Organics		
	• Class 1,2		
	• Class 3,4		
	• Class 5,6 and 7		
C) LINKED FARMING OPERATIONS (numbers)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields		
	• isolation of between 25% to 50% of fields		
	• isolation of less than 25% of the working fields		

4.2 COMMERCIAL INDUSTRIAL

(Weight = 20)

INDICATOR	MEASURE	D1\E1	D2A\E1	D2B\E1
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0	0
	b) Number of jobs affected	0	0	0
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0	0
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0	0
	b) Number of industrial businesses displaced	0	0	0
	c) Number of aggregate operations displaced	0	0	0
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	0	0	0
	b) Number of industrial businesses disrupted	0	0	0
	c) Number of aggregate operations disrupted	0	0	0
TOTAL		4	4	4
No Impacts.				
Weighted Score				

EVALUATION CRITERIA - D1/E1 vs D2A/E1 vs D2B/E1

5. Cultural Environment	5.1 Archaeology	Indicator	D1/E1	D2A/E1	D2B/E1		
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C = 1)	0 0 0	0 6 0	0 8 0		
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	L	M	v. H		
		c) amount of land within 200 m of water	v. H	H	v. H		
		Archaeological potential (high/med/low)	M	H	v. H		

		Score (0-4)	3	2	1		
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ROUTE COMPARISON BY TRADE-OFF METHOD - D1/E1 vs D2A/E1 vs D2B/E1

FACTOR	D1/E1	D2A/E1	D2B/E1	COMMENT
5.1 a) Number of registered sites directly impacted	●	○	○	D2A/E1 will directly affect three Paleo-Indian sites, including the Udora site; D2B/E1 will affect four Paleo-Indian sites, including the Udora site
b) Amount of land within 500 m of beach ridge	●	○	○	D2B/E1 follows the beach ridge most closely
c) Amount of land within 200 m of water	○	●	○	Difference between three alternatives is slight but somewhat less land near water for D2A/E1

Prefer D1/E1

Route Segments: 11-13
D1/E1
D2A/E1
D2B/E1

D2B/E1	D1/E1	D2A/E1	D2B/E1
Cultural landscapes displaced	11 roadscapes	8 roadscapes	8 roadscapes
	16 farm complexes	15 farm complexes	14 farm complexes
	Lot 9 Con 9 (T)	Lot 9 Con 9 (T)	Lot 9 Con 9 (T)
	Lot 9 Con 8 (T)	Lot 9 Con 8 (T)	Lot 9 Con 8 (T)
	Lot 8 con 5 (T)	Lot 8 Con 5 (T)	Lot 8 Con 5 (T)
	Lot 8 Con 5 (T)	Lot 9 Con 5 (T)	Lot 8 Con 5(T)
	Lot 9 Con 4 (T)	Lot 9 Con 4 (T)	Lot 9 Con 4 (T)
	Lot 9 Con 1 (T)	Lot 9 Con 1 (T)	Lot 9 Con 1 (T)
	Lot 13 Con 14 (B)	Lot 13 Con 14 (B)	Lot 15 Con 14 (B)
	Lot 14 Con 13 (B)	Lot 14 Con 13 (B)	Lot 14 Con 14 (B)
	Lot 14 Con 11 (B)	Lot 12 Con 12 (B)	Lot 13 Con 13 (B)
	Lot 14 Con 10 (B)	Lot 10 Con 12 (B)	Lot 11 Con 12 (B)
	Lot 14 Con 9 (B)	Lot 6 Con 10 (B)	Lot 3 Con 12 (B)
	Lot 13 Con 9 (B)	Lot 6 Con 9 (B)	Lot 2 Con 11 (B)
	Lot 12 Con 8 (B)	Lot 10 Con 11 (B)	Lot 33 Con 7 (Ux)
	Lot 11 Con 7 (B)	Lot 33 con 7 (Ux)	Lot 35 Con 7 (Ux)
	Lot 5 Con 6 (B)	Lot 35 Con 7 (Ux)	
	Lot 31 Con 7 (Ux)		
Cultural landscapes disrupted	40 farm complexes	30 farm complexes	27 farm complexes
	Lot 8-9 Con 9 (T)	Lot 8-9 Con 9 (T)	Lot 8-9 Con 9 (T)
	Lot 10 Con 9 (T)	Lot 10 Con 9 (T)	Lot 10 Con 9 (T)
	Lot 8 Con 8 (T)	Lot 8 Con 8 (T)	Lot 8 Con 8 (T)
	Lot 9 con 8 (T)	Lot 9 Con 8 (T)	Lot 9 Con 8 (T)
	Lot 9 Con 7 (T)	Lot 9 Con 7 (T)	Lot 9 Con 7 (T)
	Lot 9 Con 3 (T)	Lot 9 Con 3 (T)	Lot 9 Con 3 (T)
	Lot 10 Con 1 (T)	Lot 10 Con 1 (T)	Lot 10 Con 1 (T)
	Lot 9 Con 1 (T)	Lot 9 Con 1 (T)	Lot 9 Con 1 (T)
	Lot 15-16 Con 4 (B)	Lot 15-16 Con 4 (B)	Lot 15-16 Con 4 (B)
	Lot 14 Con 14 (B)	Lot 14 Con 14 (B)	Lot 13 Con 14 (B)
	Lot 15 Con 14 (B)	Lot 15 Con 14 (B)	Lot 15 Con 13 (B)

Highway 404 Route Segment Analysis Round 2

Raw data description

Route Segments: 11-13
D1/E1
D2A/E1
D2B/E1

Cultural landscapes disrupted	D1/E1	D2A/E1	D2B/E1
	Lot 13 Con 13 (B)	Lot 13 Con 13 (B)	Lot 14 Con 13 (B)
	Lot 13 Con 12 (B)	Lot 13 Con 12 (B)	Lot 12 Con 13 (B)
	Lot 14 Con 12 (B)	Lot 12 Con 12 (B)	Lot 10 Con 12 (B)
	Lot 13 Con 11 (B)	Lot 11 Con 11 (B)	Lot 9 Con 13 (B)
	Lot 13 Con 10 (B)	Lot 9 Con 12 (B)	Lot 8 Con 12 (B)
	Lot 12 Con 10 (B)	Lot 10 Con 11 (B)	Lot 7 Con 12 (B)
	Lot 13 Con 10 (B)	Lot 8 Con 11 (B)	Lot 7 Con 13 (B)
	Lot 14 Con 10 (B)	Lot 6 Con 11 (B)	Lot 6 Con 12 (B)
	Lot 12 Con 9 (B)	Lot 6 Con 11 (B)	Lot 6 Con 12 (B)
	Lot 13 Con 8 (B)	Lot 7 Con 10 (B)	Lot 5 Con 12 (B)
	Lot 12 Con 8 (B)	Lot 4-5 Con 10 (B)	Lot 4 Con 11 (B)
	Lot 12 Con 7 (B)	Lot 5 Con 10 (B)	Lot 2 Con 12 (B)
	Lot 12 Con 7 (B)	Lot 5 Con 9 (B)	Lot 2 Con 10 (B)
	Lot 10 Con 6 (B)	Lot 5 Con 9 (B)	Lot 2 Con 9 (B)
	Lot 10 Con 6 (B)	Lot 4 Con 9 (B)	Lot 24 Con 2 (G)
	Lot 11 Con 6 (B)	Lot 4 Con 9 (B)	Lot 34 Con 7 (Ux)
	Lot 9 Con 6 (B)	Lot 2 Con 9 (B)	
	Lot 8 Con 6 (B)	Lot 24 Con 2 (G)	
	Lot 8 Con 6 (B)	Lot 34 Con 7 (Ux)	
	Lot 6 Con 6 (B)		
	Lot 4 Con 6 (B)		
	Lot 5 Con 6 (B)		
	Lot 3 Con 6 (B)		
	Lot 2 Con 6 (B)		
	Lot 1 Con 6 (B)		
	Lot 31 Con 7 (Ux)		
	Lot 31 Con 7 (Ux)		
	Lot 33 Con 7 (Ux)		
	Lot 34 Con 7 (Ux)		

Highway 404 Route Segment Analysis Round 2

Route Segments: 11-13
 D1/E1
 D2A/E1
 D2B/E1

	D1/E1		D2A/E1		D2B/E1	
	5 roadscapes		6 roadscapes		6 roadscapes	
Cultural landscapes disrupted						
	2 cemeteries		1 cemetery		2 cemeteries	
	Lot 9 Con 4 (T) (42-198)		(Lot 9 Con 4(T)) 42-198		Lot 9 Con 4 (T) 42-198	
	Lot 3 Con 6 (B) (5-126)				Lot 2 Con 11 (B) 3-209	
	2 historical settlements		1 historical settlement		2 historical settlement	
	(Vallentyne, Derryville)		(Udora)		(Udora, Wilfrid)	
Associated Built Heritage Features	38-214 Displaced Lot 13 Con 14		3-313 Displaced Lot 6 Con 10		38-215 Displaced Lot 14 Con 14	
	42-198 Disrupted Lot 9 Con 4		38-214 Displaced Lot 13 Con 14		42-198 Disrupted Lot 9 Con 4	
	4-137 Disrupted Lot 10 Con 6		42-198 Disrupted Lot 9 Con 4		3-209 Disrupted Lot 12 Con 11	
	4-140 Disrupted Lot 10 Con 6		38-215 Disrupted Lot 14 Con 14		38-214 Disrupted Lot 13 Con 14	
	2-271 Disrupted Lot 13 Con 11		38-270 Disrupted Lot 12 Con 12			
	38-215 Disrupted Lot 14 Con 14		3-255 Disrupted Lot 5 Lot 10			
	5-126 Disrupted Lot 3 Con 6		3-210 Disrupted Lot 4 Con 9			
			3-211 Disrupted Lot 5 Con 9			

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred D2/E

1.1 TRAFFIC OPERATIONS (Weight = 40)											
INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	Moderate	Same	Moderate	Same	Moderate	Same	Moderate	Same	Moderate	Same
e) Design hour volume (forecast)	# of Vehicles	3300	2nd	3750	1st	3750	1st	3300	2nd	3300	2nd
r) Climatic conditions	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./ vehicle)	3.4	Same	3.2	Same	3.1	Same	3.1	Same	3.1	Same
TOTAL		5		6		6		5		5	
The D2D alternatives have a higher DHV due to an additional interchange with Highway 48 in the vicinity of Durham Road 23. No other significant differences were found.											
D2D/E1 and D2D/E2 provide a moderate benefit to traffic operations, while D2C/E1, D2E/E1 and D2E/E2 provide a low benefit.											
1.2 NETWORK COMPATIBILITY (Weight = 40)											
INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Mod +	Same	Mod +	Same	Mod +	Same	Mod +	Same	Mod +	Same
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	Low +	Same	Low +	Same	Low +	Same	Low +	Same	Low +	Same
c) Consistency of design/operation	Good, Fair, Poor	Good	Same	Good	Same	Good	Same	Good	Same	Good	Same
g) Length of construction period	Years (Minimum)	5	Same	5	Same	5	Same	5	Same	5	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	Fair	Same	Fair	Same	Fair	Same	Fair	Same	Fair	Same
TOTAL		5		5		5		5		5	
No significant differences to Network Compatibility were found.											
All alternatives produce a low benefit to network compatibility.											
1.3 COST (Weight = 20)											
INDICATOR	MEASURE	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.15	2nd	1.29	3rd	1.19	2nd	1.24	3rd	1.00	1st
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.08	1st	1.09	2nd	1.05	1st	1.02	1st	1.00	1st
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.18	2nd	1.36	3rd	1.23	2nd	1.32	3rd	1.00	1st
TOTAL		3		2		3		2		3	
D2D/E1 and D2E/E1 have higher cost impacts because they require more structures over wetlands.											
D2C/E1, D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower impacts. D2D/E1 and D2E/E1 have moderate cost impacts.											

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1**

INTERSECTION 12 – 13		RAW DATA				
EVALUATION CRITERIA		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat						
1	water crossings or encroachments by stream order					
	number of water crossings – non-permanent flow	0	0	1	0	1
	number of water crossings – permanent flow					
	1st and 2nd order – high permeable soils	2	2	2	2	2
	1st and 2nd order – low permeable soils	5	4	5	4	5
	>3rd order – high permeable soils	0	0	0	0	0
	>3rd order – low permeable soils	1	1	1	1	1
	number of encroachments – non-permanently flowing (< 300 m)	0	0	0	0	0
	encroachment on Lake Simcoe (1 – 2 km)	0	0	0	0	0
	number of encroachments – permanently flowing					
	(distance from watercourse <300 m)					
	1st and 2nd order – high permeable soils	1	0	0	0	0
	1st and 2nd order – low permeable soils	1	1	0	1	0
	>3rd order – high permeable soils	0	0	0	0	0
	>3rd order – low permeable soils	0	0	0	0	0
2	permitted surface water intakes affected	0	0	0	0	0
3	presence of species at risk					
	endangered	0	0	0	0	0
	threatened	0	0	0	0	0
	vulnerable	0	0	0	0	0
4	areas of critical fish habitat					
	area of critical fish habitat – spawning	2	2	3	2	3
	area of critical fish habitat – migratory route	2	2	2	2	2
5	presence of warmwater/coldwater communities					
	presence of sensitive communities					
	brook trout	0	0	0	0	0
	walleye	0	0	1	0	1
	sculpin	1	0	0	0	0
	presence of significant communities					
	pike	0	0	0	0	0
	bass	1	0	1	0	1
	sunfish	0	0	0	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat						
1	encroachment on or severance of forested vegetation or non-forested successional areas					
	information collected as part of 2.4 (1)	56.1	47.8	16.6	59.8	21.1
2	encroachment on or severance of greenways and open space linkages					
	local	5	2	3	2	3
	regional	0	0	0	0	0
3	encroachment on or severance of significant wildlife habitat					
	route within 300 m of heronry	0	0	0	0	0
	route within 1 km of heronry	1	1	1	0	0
	route > 1 km of heronry	0	0	0	0	0
	number of habitats supporting indicator species	2	2	2	2	2
4	presence of species at risk					
	regionally rare species	0	0	0	0	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources						
1	loss of function of all wetlands withing or adjacent to study area					
	number of swamps crossed	2	3	2	6	0
	number of marshes/wet swamps crossed	3	4	2	1	0
	number of fens/bogs crossed	0	0	0	0	0
	adjacent land use					
	crossing of an active farm	1	3	3	8	0
	crossing of an abandoned farm	0	1	1	0	0
	crossing of a forest	0	1	1	3	0
2	loss of wetland area of all wetlands within study area					
	area of wetland (PSW and local) lost due to crossing (ha)	7.1	8.1	6.8	11.4	0
3	degree of interaction of all wetlands with ground water					
	crossing of high	1	2	1	1	0
	encroachment on high	2	1	1	2	0
	crossing of moderate	0	0	0	0	0
	encroachment on moderate	1	1	0	1	0
4	encroachment on or severance of wetlands					
	number of wetland (PSW and local) crossings	4	4	2	4	0
	area of encroachment (ha) – PSW and local wetlands	14.2	13.2	6.9	13.15	0
	number of wetland (PSW and local) encroachments	9	10	5	10	0

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 12 – 13		RAW DATA				
EVALUATION CRITERIA		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens						
1	encroachment on or severance of high quality forest					
	area of forest lost due to crossing (ha)	56.1	47.8	16.6	59.8	21.1
	number of forest crossings	13	9	10	14	11
	crossings of forests >400 ha	1	0	0	1	1
	crossings of forests 100–400 ha	0	0	2	0	2
	crossings of forests 40–100 ha	1	2	2	2	2
	crossings of forests 0–40 ha	6	8	7	6	5
	old growth forest crossed	0	0	0	0	0
2	encroachment on or severance of Life Science ANSI's					
	area of ANSI's (outside wetlands) lost due to crossing	0	0	0	0	0
3	encroachment on or severance of ESA's					
	area of ESA's (outside wetlands) lost due to crossing	0	0	0	0	0
4	encroachment on or severance of regional forest					
	area of forest (outside wetlands) lost due to crossing	0	0	0	0	0
5	presence of significant species or specimens at risk					
	regionally significant species	0	0	0	0	0
	locally significant species	3	3	0	3	0
6	encroachment or severance of unusual vegetation units					
	locally significant vegetation	25	22	13	23	14
	regionally significant vegetation	5	2	3	5	6
8	presence of riparian habitat					
	forested riparian habitat – 1st and 2nd order streams	1	1	1	1	1
	forested riparian habitat – 3rd order streams	0	0	0	0	0
	forested riparian habitat – > 3rd order streams	0	0	0	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply						
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	127.5	133.3	96.8	171.3	140.4
2	shallow ground water table (ha)	7.1	8.1	6.8	11.4	0
3	permit to take water	0	0	0	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms						
1	encroachment on or severance of Earth Science ANSI's	0	0	0	0	0

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

C Connections

(Weight = 60)

3.1 COMMUNITY EFFECTS

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to displace existing residences	a) Number of residences displaced	17 Fourth	9 First	13 Second	13 Second	16 Third
2 Potential to disrupt existing properties	a) Number of properties that will some property loss but not enough to warrant displacement	44 Fifth	34 Third	33 Second	36 Fourth	32 First
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same	0 Same	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	1/snowmobile	1/snowmobile	1/snowmobile	1/snowmobile	1/snowmobile
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	Same moderate First high	Same moderate First high	Same high Second moderate	Same moderate First high	Same high Second moderate
6 Potential impacts to community stability	a) Potential effect on community stability	Second moderate	Second moderate/low	First moderate/low	Second moderate	First moderate
7 Potential impacts to community character	a) Potential effect on community character	Second	First	First	Second	First
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households b) Police - % increase in response time/number of households c) Ambulance - % increase in response time/number of households	41/7 46/13 40/13 32/8 16/1 22/13 9/8 21 /13 13/13 12/8 15/13 41/7 46/13 40/13 32/8 Third	17/6 41/7 46/13 40/ 13 32/8 9/1 21/13 13/13 12/ 8 41/7 46/13 40/13 32 /8 Third	17/6 24/6 0 Second	46/13 40/13 32/8 16/1 16/3 20/5 21 /13 13/13 12/8 46/13 40/13 32/8 Fourth	0 16/1 16/3 20/5 /13 13/13 12/8 0 First
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0 Same	0 0 Same	0 0 Same	0 0 Same	0 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	outside boundary Same	outside boundary Same	outside boundary Same	outside boundary Same	Same outside boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected	3.5 1.5 3.5 3.3 3.2 3.1 3.1 1 0 13 8 13 13 8 First	3.5 3.3 3.2 3.1 3.1 5 6 8 13 13 8 Second	3.5 3.1 3.1 1.2 1.2 5 6 6 1 0 20 Third	3.5 2.6 3.1 3.2 3.1 6 1 3 5 1 0 20 Second	3.5 2.6 3.1 3.1 1.2 6 1.2 1 3 5 1 0 20 Third
TOTAL		2	2	1	2	1

All the alternatives linearly split Brock Township. However the alternative which connects to E2 add the impact of splitting the Beaverton area as well. Therefore, D2C/E1, D2D/E1, D2E/E1 and D2E/E1 are preferred to D2D/E2 and D2E/E2. Of D2C/E1, D2D/E1, D2E/E1 is slightly preferred as utilizing the existing highway corridor is more consistent with the existing character of the area

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY C Connections

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	24	25	17	29	22
	b) Number of cluster residential areas exposed to the highway	1	1	6	1	6
	c) Number of residences affected within each clustered area	8	8	70	8	70
		First	First	Second	First	Second
TOTAL		2	2	1	2	1
Alternatives which connect to E2 visually impact more residences than those which connect to E1. Impact along the D segments are similar. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred.						

HIGHWAY 404 ENVIRONMENTAL ASSESSMENT STUDY **C Connections**

3.3 NOISE

(Weight = 30)

INDICATOR	D2C/E1					D2D/E1					D2D/E2					D2E/E1					D2E/E2				
	Leq (24)	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
1 Potential to increase noise levels at adjacent receivers	45-50 dBA	11	10	6		8	8	2		19	24	15	1	9	6	7		21	22	19					
	51-55 dBA						2				2														
	56-60 dBA					1				1				1				1							
	61-65 dBA																								
	66-70 dBA																								
TOTAL			2				3				1				2							1			

The number of noise sensitive receivers experiencing an increase above existing is much lower with those alternatives which connect to E1. D2D minimizes impacts to those residences in the existing Highway 48 corridor. Therefore, D2D/E1 is preferred.

TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1

Intersection Points ----->		12 – 13					
EVALUATION CRITERIA		D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2	
		Raw Score	Raw Score	Raw Score	Raw Score	Raw Score	
A) FARM OPERATION UNITS (number of each)							
1)	Displacement of Capital Value (e.g. farm complex)						
	• displacement of high value farm	4	3	5	5	4	4
	• displacement of medium value farm	3	0	1	4	3	3
	• displacement of low value farm	5	6	6	3	6	6
2)	Orientation of the severance						
	• diagonal severances	5	4	3	4	4	4
	• horizontal or vertical severance	15.5	11.5	15	9.5	12	12
	• severance along property boundary	12	12.5	13	13.5	11	11
3)	Separation of farm buildings from working fields						
	• isolation of greater than 50% of fields	5	7	7	3	4	4
	• isolation of between 25% to 50% of fields	5	2	2	4	3	3
	• isolation of less than 25% of the working fields	10	4	3	8	8	8
B) SOIL CAPABILITY (hectares)							
1)	Displacement of crop and pasture land						
	• specialty crops	0	0	0	0	0	0
	• continuous or mixed system	158.25	144.12	180	152.5	176	176
	• pasture or grazing system	10.87	3.37	4.5	3.4	4.75	4.75
2)	Displacement of soils with capability for agriculture						
	• Organics	22	32	27	25	8	8
	• Class 1,2	155	136	184	131	176	176
	• Class 3,4	47	66	17	64	27	27
	• Class 5,6 and 7	7	7	7	7	7	7
C) LINKED FARMING OPERATIONS (number of each)							
1)	Effect on linked operations						
	• isolation of greater than 50% of fields	0	0	0	0	0	0
	• isolation of between 25% to 50% of fields	2	1	1	2	2	2
	• isolation of less than 25% of the working fields	1	0	0	0	0	0

C Connections

(Weight = 20)

4.2 COMMERCIAL INDUSTRIAL

INDICATOR	MEASURE	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	1	1	0	0
	b) Number of jobs affected	0	??	??	0	0
		Same	Same	Same	Same	Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0	0	0	0
		Same	Same	Same	Same	Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0	0	0	0
	b) Number of industrial businesses displaced	0	1	1	0	0
	c) Number of aggregate operations displaced	0	0	0	0	0
		Same	Same	Same	Same	Same
4 Potential to disrupt commercial/industrial businesses (partial)	a) Number of commercial businesses disrupted	0	0	0	0	0
	b) Number of industrial businesses disrupted	0	0	0	0	0
	c) Number of aggregate operations disrupted	0	0	0	0	0
		Same	Same	Same	Same	Same
TOTAL		4	3	3	4	4
No Impacts with D2C/E1, D2E//E1 and D2E/E2; low impacts with D2D//E1 and D2D/ E2						

**EVALUATION CRITERIA - D2C/E1 vs D2D/E1 vs D2D/E2 vs D2E/E1 vs D2E/E2
(12-13)**

5. Cultural Environment	5.1 Archaeology	Indicator	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	L	L	L	L
		c) amount of land within 200 m of water	M	M	M	M	M
		Archaeological potential (high/med/low)	M	L	L	L	L

		Score (0-4)	2	3	3	3	3
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ROUTE COMPARISON BY TRADE-OFF METHOD - D2C/E1 vs D2D/E1 vs D2D/E2 vs D2E/E1 vs D2E/E2 (12-13)

FACTOR	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	SAME	SAME	SAME	
b) Amount of land within 500 m of beach ridge	○	SAME	SAME	SAME	SAME	
c) Amount of land within 200 m of water	○	SAME	SAME	SAME	SAME	D2C/E1 has one more crossing of a major drainage than other alternatives

Prefer anyone of D2D/E1; D2D/E2/ D2E/E1; D2E/E2

Highway 404 Route Segment Analysis Round 1

Raw data description

Route Segments:

12-13

D2C/E1

D2D/E1

D2D/E2

D2E/E1

D2E/E2

	D2C/E1		D2D/E1		D2D/E2		D2E/E1		D2E/E2	
Cultural landscapes displaced	farm complexes	Lot 11 Con 13	farm complexes	Lot 17 Con 1	farm complexes	Lot 17 Con 1	farm complexes	Lot 5 Con 14 B	farm complexes	Con. 14 Lot 5
		Lot 15 Con 14		Lot 8 Con 5 T		Lot 12 Con 5		Lot 9 Con 4 T		Lot 3 Con 13 B
		Lot 8 Con 5 T		Lot 8 Con 5		Lot 11/12 Con 6		Lot 8 Con 5 T		Con. 6 Lot 11/12
		Lot 8 Con 5 T		Lot 2 Con 11 B		Lot 11 Con 9		Lot 8 Con 5 T		Con. 9 Lot 11
		Lot 2 Con 11 B		Lot 3 Con 12 B		Lot 2 Con 11 B		Lot 2 Con 11 B		Con. 5 Lot 12
		Lot 3 Con 12 B				Lot 3 Con 12 B		Lot 3 Con 12 B		Lot 2 Con 11 B
		Lot 3 Con 13 B				Lot 12 Con 1 T		Lot 3 Con 13 B		Lot 3 Con 12 B
						Lot 12 Con 2 T				Lot 5 Con 13 B
						Lot 10 Con 9 T		Lot 5 Con 13 B		Lot 6 Con 14 B
		Lot 13 Con 13 B				Lot 12 Con 2 T		Lot 5 Con 14 B		Lot 5 Con 14 B
		Lot 13 Con 14 B				Lot 12 Con 1 T		Lot 6 Con 14 B		Lot 19 Con 1 T
		Lot 14 Con 14 B		Lot 10 Con 1 T		Lot 2 Con 13 B		Lot 19 Con 1 T		
		Lot 9 Con 1 T		Lot 9 Con 8 T						Lot 10 Con 9 T
		Lot 9 Con 4		Lot 9 Con 9 T				Lot 9 Con 8 T		
		Lot 9 Con 8 T		Lot 2 Con 13 B				Lot 9 Con 9 T		
		Lot 9 Con 9 T		Lot 9 Con 4 T						
		7 roadscares		4 roadscares		4 roadscares		7 roadscares		7 roadscares
Cultural landscapes disrupted	farm complexes		farm complexes		farm complexes		farm complexes		farm complexes	
		Lot 10 Con 1 T		Lot 3 Con 13 B		Lot 3 Con 13 B				
		Lot 2 Con 12 B		Lot 2 Con 12 B		Lot 2 Con 12 B		Lot 12 Con 2		Lot 2 Con 12 B
		Lot 5 Con 13 B		Lot 5 Con 14 B		Lot 5 Con 14 B		Con. 2 Lot 12		
				Lot 14 Con 1 T		Lot 14 Con 1 T		Lot 4 Con 13 B		
		Lot 4 Con 13 B		Lot 13 Con 1 T		Lot 13 Con 1 T		Lot 19 Con 1 T		Lot 4 Con 13 B
				Lot 3 Con 13 B		Lot 3 Con 13 B				Lot 5 Con 13 B
		Lot 5 Con 13 B		Lot 12 Con 1 T		Lot 12 Con 1 T		Lot 5 Con 13 B		Lot 19 Con 1 T
				Lot 16 Con 1 T		Lot 16 Con 1 T		Lot 6 Con 13 B		Lot 6 Con 13 B

Highway 404 Route Segment Analysis Round 1

Raw data description

	Lot 6 Con 13 B	Lot 15 Con 1 T Lot 9 Con 1 T	Lot 15 Con 1 T Lot 9/10 Con 14 B	Lot 6 Con 14 B	Lot 6 Con 14 B
	Lot 14 Con 13 B	Lot 9/10 Con 14 B	Lot 11 Con 14 B		
	Lot 15/16 Con 14 B Lot 15 Con 13 B				
	Lot 9 Con 1 T Lot 9 Con 3 T	Lot 9 Con 1 T Lot 9 Con 3 T	Lot 12 Con 3 T Lot 11 Con 3 T Lot 12 Con 4 T Lot 11 Con 5 T Lot 12 Con 6 T Lot 10 Con 7 T Lot 10 Con 8 T	Lot 19 Con 2 T Lot 18 Con 2 T Lot 16 Con 2 T Lot 16 Con 2 T Lot 15 Con 2 T Lot 15 Con 2 T Lot 14 Con 2 T Lot 13 Con 2 T Lot 12 Con 2 T Lot 9 Con 3 T Lot 11 Con 3 T Lot 12 Con 4 T Lot 11 Con 5 T Lot 12 Con 6 T Lot 10 Con 7 T Lot 10 Con 8 T	Lot 19 Con 2 T Lot 18 Con 2 T Lot 16 Con 2 T Lot 16 Con 2 T Lot 15 Con 2 T Lot 15 Con 2 T Lot 14 Con 2 T Lot 13 Con 2 T Lot 12 Con 2 T Lot 9 Con 3 T Lot 11 Con 3 T Lot 12 Con 4 T Lot 11 Con 5 T Lot 12 Con 6 T Lot 10 Con 7 T Lot 10 Con 8 T
	Lot 9 Con 7 T Lot 9 Con 8 T Lot 8 Con 8 T	Lot 9 Con 7 T Lot 9 Con 8 T Lot 10 Con 9 T	Lot 8/9 Con 9 T	Lot 9 Con 7 T Lot 10 Con 9 T	Lot 8/9 Con 9 T Lot 10 Con 9 T
	Lot 8/9 Con 9 T Lot 10 Con 9 T				
	1 cemetery Lot 9 Con 4, 42-198	1 cemetery Lot 9 Con 4, 42-198	1 cemetery Lot 11 Con 6, 42-201	2 cemeteries Lot 4 Con 14, 37-204 Lot 9, Con 4, 42-198	2 cemeteries Lot 11 Con 6, 42-201 Lot 4 Con 14, 37-204
	4 roadscapes	4 roadscapes	2 roadscapes	3 roadscapes	1 roadscapes
	1 historical settlement (Wilfrid)	1 historical settlement (Wilfrid)	2 historical settlement (Wilfrid) (Beaverton)	1 historical settlement (Wilfrid)	2 historical settlement (Wilfrid) (Beaverton)
Associated built heritage features	38-214 Disrupted 38-215 Disrupted 42-198 Disrupted	42-198 Disrupted	42-201 Disrupted	42-198 Disrupted 40-203 Disrupted 37-204 Disrupted	42-201 Disrupted 37-204 Disrupted 40-203 Disrupted

ROUTE SEGMENT ANALYSIS AND EVALUATION

- **B1B vs B1C**

B1B vs B1C SUMMARY

1.1 TRAFFIC OPERATIONS (*Weight = 40*)

INDICATOR	MEASURE	B1B		B1C	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	7200	Same	7200	Same
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	2.1	Same	2.0	Same
TOTAL		6		6	

B1B and B1C produce similar benefits to traffic operations.

Both routes produce a moderate benefit to traffic operations.

1.2 NETWORK COMPATIBILITY (*Weight = 40*)

INDICATOR	MEASURE	B1B		B1C	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	2	Same	2	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	N/A	N/A	N/A	N/A
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
TOTAL		5		5	

Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes.

Both routes provide a low benefit to traffic operations.

1.3 COST (*Weight = 20*)

INDICATOR	MEASURE	B1B		B1C	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.11	Higher	1.00	Lower
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.00	Same	1.07	Same
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.12	Higher	1.00	Lower
TOTAL		3		3	

B1B has an additional grade separation (at Ravenshoe Road), resulting in higher construction and maintenance costs.

Both routes have low cost impacts, with B1C having slightly lower cost impacts.

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1**

INTERSECTION 3 – 4		RAW DATA	
EVALUATION CRITERIA		B1B	B1C
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings – non-permanent flow	2	1
	number of water crossings – permanent flow		
	1st and 2nd order – high permeable soils	0	0
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	0	0
	number of encroachments – non-permanent flow (< 300 m)	4	3
	encroachment on Lake Simcoe (1 – 2 km)	0	0
	number of encroachments – permanent flow		
	(distance from watercourse <300 m)		
	1st and 2nd order – high permeable soils	0	0
	1st and 2nd order – low permeable soils	0	0
	>3rd order – high permeable soils	0	0
	>3rd order – low permeable soils	0	0
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat – spawning	0	0
	area of critical fish habitat – migratory route	0	0
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	0
	walleye	0	0
	sculpin	0	0
	presence of significant communities		
	pike	0	0
	bass	0	0
	sunfish	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	information collected as part of 2.4 (1)	3.8	3.8
2	encroachment on or severance of greenways and open space linkages		
	local	0	0
	regional	0	0
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	1	0
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	0	0
4	presence of species at risk		
	regionally rare species	0	0
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	1	0
	number of marshes/wet swamps crossed	0	0
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	1	0
	crossing of an abandoned farm	0	0
	crossing of a forest	0	0
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	1.3	0
3	degree of interaction of all wetlands with ground water		
	crossing of high	1	0
	encroachment on high	2	0
	crossing of moderate	0	0
	encroachment on moderate	0	0
4	encroachment on or severance of wetlands		
	number of wetland (PSW and local) crossings	1	0
	area of encroachment (ha) – PSW and local wetlands	6.9	0
	number of wetland (PSW and local) encroachments	4	0

**HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1**

INTERSECTION 3 – 4		RAW DATA	
EVALUATION CRITERIA		B1B	B1C
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	3.8	3.8
	number of forest crossings	1	1
	crossings of forests >400 ha	0	0
	crossings of forests 100–400 ha	0	0
	crossings of forests 40–100 ha	0	0
	crossings of forests 0–40 ha	1	1
	old growth forest crossed	0	0
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	0	0
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	0	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	0	0
	regionally significant vegetation	0	0
8	presence of riparian habitat		
	forested riparian habitat – 1st order streams	0	0
	forested riparian habitat – 2nd and 3rd order streams	0	0
	forested riparian habitat – > 3rd order streams	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge – highly permeable soil and susceptibility to contamination (ha)	22.7	22.3
2	shallow ground water table (ha)	1.3	0
3	permit to take water	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS (Weight = 60)

INDICATOR	MEASURE	B1B	B1C
1 Potential to displace existing residences	a) Number of residences displaced	5 Higher	3 Lower
2 Potential to disrupt existing properties	a) Number of properties that will experience some property lose but not enough to warrant displacement	19 Lower	21 Higher
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	1/snowmobile Same	1/snowmobile Same
5 Potential impact to community	a) Potential effect on community cohesion	Low Same	Low Same
6 Potential impact to community	a) Potential effect on community stability	Low Same	Low Same
7 Potential impact to community	a) Potential effect on community	Low Same	Low Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households Total number of households affected b) Police - % increase in response time/number of households Total number of households affected c) Ambulance - % increase in response time/number of households Total number of households affected	0 0 0 0 0 0 Same	0 0 0 0 0 0 Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of	0 0 Same	0 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	Outside Boundary Lower	Inside Boundary Higher
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected Total number of residences affected	0 0 0 0 Same	0 0 0 0 Same
TOTAL		3	1
B1C is located with the boundaries of the Keswick Secondary Plan. The location of this alternative severs the major growth area of Keswick and is inconsistent with future development. As a result B1B is preferred.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	B1B	B1C
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	6	3
	b) Number of clustered residential areas exposed to the highway	0	0
	c) Number of residences affected within each clustered area	0	0
		Higher	Lower
TOTAL		3	3
Both alternatives are in close proximity to an urban area with existing major roads, however B1B visually impacts slightly more farmstead residences.			

3.3 NOISE

(Weight = 30)

INDICATOR		BIB				BIC			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA		7	2			8	2	
	51-55 dBA								
	56-60 dBA						1		
	61-65 dBA								
	66-70 dBA								
TOTAL		3				3			
Both alternatives produce similar impacts.									

**TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1**

Intersection Points - - - - - >		2-4	
EVALUATION CRITERIA		B1B Raw Score	B1C Raw Score
A) FARM OPERATION UNITS (number of each)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	1	0
	• displacement of medium value farm	0	0
	• displacement of low value farm	1	1
2)	Orientation of the severance		
	• diagonal severances	1	1
	• horizontal or vertical severance	7	5
	• severance along property boundary	3	6
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	1	1
	• isolation of between 25% to 50% of fields	0	1
	• isolation of less than 25% of the working fields	6.5	4
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	0
	• continuous or mixed system	37.5	48.5
	• pasture or grazing system	8.7	0
2)	Displacement of soils with capability for agriculture		
	• Organics	25	0
	• Class 1,2	25	51
	• Class 3,4	7	9
	• Class 5,6 and 7	0	0
C) LINKED FARMING OPERATIONS (number of each)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	0	0
	• isolation of less than 25% of the working fields	1	0

4.2 COMMERCIAL INDUSTRIAL (Weight = 20)





INDICATOR	MEASURE	B1B	B1C
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0
	b) Number of jobs affected	0 Same	0 Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0 Same	0 Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	1	1
	b) Number of industrial businesses displaced	0	2
	c) Number of aggregate operations displaced	0	0
		Lower	Higher
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	0	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0	0
		Same	Same
TOTAL		3	2
B1B displaces one business, while B1C displaces three. B1B has low impacts and B1C has moderate impacts.			

EVALUATION CRITERIA - B1B vs B1C

5. Cultural Environment	5.1 Archaeology	Indicator	B1B	B1C			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C = 1)	0 0 0	0 4 1			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	M			
		c) amount of land within 200 m of water	H	L			
		Archaeological potential (high/med/low)	H	H			

		Score (0-4)	3	1			
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ROUTE COMPARISON BY TRADE-OFF METHOD - B1B vs B1C

FACTOR	B1B	B1C	COMMENT
5.1 a) Number of registered sites directly impacted			Two Paleo-Indian sites - one is Deavitt site recommended for avoidance; one 19th century church with possible cemetery
b) Amount of land within 500 m of beach ridge	SAME	SAME	
c) Amount of land within 200 m of water			B1B runs along Maskinonge River; B1C has no major drainages

Prefer B1B because no impact to known sites with possibility of human burials

Route Segments: B1B and B1C

B1B		B1C
Cultural landscapes displaced	1 roadscape	1 roadscape
	farm complexes	farm complexes
	Lot 2 Con 4 G/NG	Lot 33 Con3 EG
Cultural landscapes disrupted	farm complexes	farm complexes
	Lot 30 Con 3 EG	Lot 30 Con 3 EG
	Lot 31 Con3 EG	Lot 31 Con 3 EG
	Lot 31 Con3 EG	Lot 31 Con 3 EG
	Lot 32 Con3 EG	Lot 32 Con 3 EG
	Lot 32 Con3 EG	Lot 32 Con 3 EG
	Lot 33 Con3 EG	Lot 34 Con 3 EG
	Lot 34 Con3 EG	Lot 2 Con 4 G/NG
	Lot 35 Con3 EG	
Associated built heritage features	0	0

ROUTE SEGMENT ANALYSIS AND EVALUATION

- Preferred D2A (D2A North vs D2A South)

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT STUDY

8/12/96

D2A NORTH VS SOUTH summary

1.1 TRAFFIC OPERATIONS (Weight = 40)

INDICATOR	MEASURE	D2A North		D2A South	
c) Length of highway subject to potential slow moving vehicles	High, Moderate, Low	<i>Low</i>	Same	<i>Low</i>	Same
e) Design hour volume (forecast)	# of Vehicles	3300	Same	3300	Same
r) Climatic conditions	Good, Fair, Poor	<i>Fair</i>	Same	<i>Fair</i>	Same
t) Energy usage with alternative	Litres of fuel consumed (avg./vehicle)	0.8	Same	0.7	Same
TOTAL		5		5	

No significant differences in traffic operations between D2A North and D2A South.

Both routes provide low benefits to traffic operations.

1.2 NETWORK COMPATIBILITY (Weight = 40)

INDICATOR	MEASURE	D2A North		D2A South	
a) Effect on traffic volumes on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
b) Effect on traffic operations on parallel/crossing roads	High, Moderate, Low, No Effect; Benefit = +, Impact = -	N/A	N/A	N/A	N/A
c) Consistency of design/operation	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
g) Length of construction period	Years (Minimum)	2	Same	2	Same
h) Ability to stage implementation of the undertaking	Good, Fair, Poor	N/A	N/A	N/A	N/A
i) Ability to upgrade undertaking as warranted by future needs	Good, Fair, Poor	<i>Good</i>	Same	<i>Good</i>	Same
TOTAL		5		5	

Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes.

Both routes provide low benefits to network compatibility.

1.3 COST (Weight = 20)

INDICATOR	MEASURE	D2A North		D2A South	
a) Construction cost	Comparative Ratio (Lowest = 1.0)	1.13	Higher	1.00	Lower
b) Operating cost	Comparative Ratio (Lowest = 1.0)	1.23	Higher	1.00	Lower
c) Maintenance cost	Comparative Ratio (Lowest = 1.0)	1.01	Same	1.00	Same
TOTAL		3		3	

D2A North has higher costs than D2A South, because D2A North is a longer route and has higher property costs.

Both routes have low cost impacts, with D2A South having slightly lower cost impacts.

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 14 - 15		RAW DATA	
EVALUATION CRITERIA		D2A N	D2A S
2.1 FISHERIES AND AQUATIC HABITAT: examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat			
1	water crossings or encroachments by stream order		
	number of water crossings - non-permanent flow	1	1
	number of water crossings - permanent flow		
	1st and 2nd order - high permeable soils	0	0
	1st and 2nd order - low permeable soils	1	1
	>3rd order - high permeable soils	0	0
	>3rd order - low permeable soils	0	0
	number of encroachments - non-permanently flowing (< 300 m)	0	0
	encroachment on Lake Simcoe (1-2 km)	0	0
	number of encroachments - permanently flowing		
	(distance from watercourse <300 m)		
	1st and 2nd order - high permeable soils	0	0
	1st and 2nd order - low permeable soils	1	1
	>3rd order - high permeable soils	0	0
	>3rd order - low permeable soils	0	0
2	permitted surface water intakes affected	0	0
3	presence of species at risk		
	endangered	0	0
	threatened	0	0
	vulnerable	0	0
4	areas of critical fish habitat		
	area of critical fish habitat - spawning	0	0
	area of critical fish habitat - migratory route	0	0
5	presence of warmwater/coldwater communities		
	presence of sensitive communities		
	brook trout	0	0
	walleye	0	0
	sculpin	1	0
	presence of significant communities		
	pike	0	0
	bass	1	0
	sunfish	0	0
2.2 WILDLIFE: examines the impact each alternative will have on wildlife species and habitat			
1	encroachment on or severance of forested vegetation or non-forested successional areas		
	information collected as part of 2.4 (1)	4.8	7.8
2	encroachment on or severance of greenways and open space linkages		
	local	0	0
	regional	0	0
3	encroachment on or severance of significant wildlife habitat		
	route within 300 m of heronry	0	0
	route within 1 km of heronry	0	1
	route > 1 km of heronry	0	0
	number of habitats supporting indicator species	2	2
4	presence of species at risk		
	regionally rare species	0	1
2.3 WETLANDS: examines the impact each alternative will have on wetland resources			
1	loss of function of all wetlands withing or adjacent to study area		
	number of swamps crossed	0	0
	number of marshes/wet swamps crossed	0	1
	number of fens/bogs crossed	0	0
	adjacent land use		
	crossing of an active farm	0	2
	crossing of an abandoned farm	0	0
	crossing of a forest	0	1
2	loss of wetland area of all wetlands within study area		
	area of wetland (PSW and local) lost due to crossing (ha)	0	1.3
3	degree of interaction of all wetlands with ground water		
	crossing of high		
	encroachment on high	0	1
	crossing of moderate	1	2
	encroachment on moderate	0	0
		0	0
4	encroachment on or severance of wetlands		
	number of crossings (PSW and local)	0	1
	area of encroachment (ha) - PSW and local wetlands	2.6	2.4
	number of wetland (PSW and local) encroachments	1	2

HIGHWAY 404 EXTENSION: EVALUATION OF ROUTE ALTERNATIVES
ROUND 1

INTERSECTION 14 - 15		RAW DATA	
EVALUATION CRITERIA		D2A N	D2A S
2.4 VEGETATION: examines the impact each alternative will have on vegetation units and individual specimens			
1	encroachment on or severance of high quality forest		
	area of forest lost due to crossing (ha)	4.8	7.8
	number of forest crossings	2	3
	crossings of forests > 400 ha	0	0
	crossings of forests 100-400 ha	0	0
	crossings of forests 40-100 ha	0	0
	crossings of forests 0-40 ha	2	3
	old growth forest crossed	0	0
2	encroachment on or severance of Life Science ANSI's		
	area of ANSI's (outside wetlands) lost due to crossing	0	0
3	encroachment on or severance of ESA's		
	area of ESA's (outside wetlands) lost due to crossing	0	0
4	encroachment on or severance of regional forest		
	area of forest (outside wetlands) lost due to crossing	0	0
5	presence of significant species or specimens at risk		
	regionally significant species	0	0
	locally significant species	0	0
6	encroachment or severance of unusual vegetation units		
	locally significant vegetation	8	7
	regionally significant vegetation	2	2
8	presence of riparian habitat		
	forested riparian habitat - 1st and 2nd order streams	0	0
	forested riparian habitat - 3rd order streams	0	0
	forested riparian habitat - > 3rd order streams	0	0
2.5 GROUND WATER: examines the impact each alternative will have on commercial and domestic water supply			
1	ground water recharge - highly permeable soil and susceptibility to contamination (ha)	11.8	13.3
2	shallow ground water table (ha)	0	1.3
3	permit to take water	0	0
2.6 GEOLOGY: examines the impact each alternative will have on significant landforms			
1	encroachment on or severance of Earth Science ANSI's	0	0

3.1 COMMUNITY EFFECTS

(Weight = 60)

INDICATOR	MEASURE	D2A NORTH	D2A SOUTH
1 Potential to displace existing residences	a) Number of residences displaced	6 Higher	2 Lower
2 Potential to disrupt existing properties	a) Number of properties that will some property loss but not enough to warrant displacement	13 Lower	15 Higher
3 Potential to displace institutional and recreational features	a) Number/type displaced	0 Same	0 Same
4 Potential to disrupt institutional and recreational features (loss of property but not enough to warrant displacement)	a) Number/type disrupted	0 Same	0 Same
5 Potential impacts to community cohesion	a) Potential effect on community cohesion	moderate Same	moderate Same
6 Potential impacts to community stability	a) Potential effect on community stability	high Same	high Same
7 Potential impacts to community character	a) Potential effect on community character	moderate Same	moderate Same
8 Potential disruption to emergency services	a) Fire - % increase in response time/number of households b) Police - % increase in response time/number of households c) Ambulance - % increase in response time/number of households	0 34/7 22/12 31/7 15/12 Same	0 34/7 22/12 31/7 15/12 Same
9 Potential to displace and/or disrupt planned development	a) Number of registered or draft plans of subdivisions displaced b) Number/degree of impact to registered or draft plans of subdivisions disrupted	0 0 Same	0 0 Same
10 Potential to impact future development	a) Consistency with official plan boundaries	outside boundary Same	outside boundary Same
11 Potential reduction in community mobility	a) Number of road closings b) Length of road affected c) Number of residences affected	2 3.6 3.6 7 13 Same	2 3.5 3.6 7 12 Same
TOTAL		1	2
Both alternatives are very similar in all indicators with exception of potential to displace existing residences. From this respect D2A South has the lower impact and is therefore preferred over D2A North.			

3.2 AESTHETICS

(Weight = 10)

INDICATOR	MEASURE	D2A NORTH	D2A SOUTH
1 Potential to visually impact the landscape of sensitive viewer groups	a) Number of farmstead residences exposed to the highway	7	3
	b) Number of cluster residential areas exposed to the highway	0	0
	c) Number of residences affected within each clustered area	0	0
		Higher	Lower
TOTAL		2	3
Alternative D2A North produces higher aesthetic impacts.			

3.3 NOISE

(Weight = 30)

INDICATOR		D2A North				D2A South			
1 Potential to increase noise levels at adjacent receivers	Leq (24)	Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative				Number of houses subject to a noise increase in dBA over 2011 Do Nothing Alternative			
		1-5	6-10	11-15	>15	1-5	6-10	11-15	>15
	45-50 dBA		3	1		1	1	1	
	51-55 dBA								
	56-60 dBA								
	61-65 dBA								
	66-70 dBA								
TOTAL		2				2			
Both alternatives produce similar impacts but D2A North results in slightly higher impacts.									

**TABLE 5: RAW DATA FOR THE AGRICULTURAL ASSESSMENT
HIGHWAY 404 EXTENSION PROJECT – ROUND 1**

Intersection Points ----->		14 – 15	
EVALUATION CRITERIA		D2A N	D2A S
		Raw Score	Raw Score
A) FARM OPERATION UNITS (number of each)			
1)	Displacement of Capital Value (e.g. farm complex)		
	• displacement of high value farm	3	2
	• displacement of medium value farm	1	3
	• displacement of low value farm	4	0
2)	Orientation of the severance		
	• diagonal severances	2	1
	• horizontal or vertical severance	6	5
	• severance along property boundary	3	3
3)	Separation of farm buildings from working fields		
	• isolation of greater than 50% of fields	3	2
	• isolation of between 25% to 50% of fields	1	1
	• isolation of less than 25% of the working fields	2	3
B) SOIL CAPABILITY (hectares)			
1)	Displacement of crop and pasture land		
	• specialty crops	0	0
	• continuous or mixed system	66.5	58.25
	• pasture or grazing system	0	8.25
2)	Displacement of soils with capability for agriculture		
	• Organics	0	0
	• Class 1,2	65	60
	• Class 3,4	6	6
	• Class 5,6 and 7	3	0
C) LINKED FARMING OPERATIONS (number of each)			
1)	Effect on linked operations		
	• isolation of greater than 50% of fields	0	0
	• isolation of between 25% to 50% of fields	2	2
	• isolation of less than 25% of the working fields	0	0

4.2 COMMERCIAL INDUSTRIAL (Weight = 20)

INDICATOR	MEASURE	D2A NORTH	D2A SOUTH
1 Potential to displace tourism businesses	a) Number of tourism businesses displaced	0	0
	b) Number of jobs affected	0	0
		Same	Same
2 Potential to disrupt tourism businesses (partial property taking)	a) Number of tourism businesses disrupted	0	0
		Same	Same
3 Potential to displace commercial/industrial businesses	a) Number of commercial businesses displaced	0	0
	b) Number of industrial businesses displaced	0	0
	c) Number of aggregate operations displaced	0	0
		Same	Same
4 Potential to disrupt commercial/industrial businesses (partial property taking)	a) Number of commercial businesses disrupted	0	0
	b) Number of industrial businesses disrupted	0	0
	c) Number of aggregate operations disrupted	0	0
		Same	Same
TOTAL		4	4
No Impacts.			
Weighted Score			

EVALUATION CRITERIA - D2AN vs D2AS

5. Cultural Environment	5.1 Archaeology	Indicator	D2AN	D2AS			
		a) number of registered archaeological sites directly impacted - Iroquoian site - Paleo-Indian site - Archaic or 19th century site (Weight factors - Iroquoian = 6 Paleo-Indian = 2 Archaic/19th C =1)	0 0 0	0 0 0			
		b) amount of land within 500 m of glacial Lake Algonquin beach ridge	M	L			
		c) amount of land within 200 m of water	L	L			
		Archaeological potential (high/med/low)	M	L			

		Score (0-4)	2	3			
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ROUTE COMPARISON BY TRADE-OFF METHOD - D2AN vs D2AS

FACTOR	D2AN	D2AS	COMMENT
5.1 a) Number of registered sites directly impacted	SAME	SAME	
b) Amount of land within 500 m of beach ridge	○	●	
c) Amount of land within 200 m of water	SAME	SAME	

Prefer D2AS

Highway 404 Route Segment Analysis Round 1

Raw data description

Route Segments: D2A North and D2A South

Cultural landscapes displaced	D2A North		D2A South	
	farm complexes		farm complex	
	Lot 10 Con 12		Lot 10 Con 12	
	Lot 12 Con 13		Lot 12 Con 12 B	
	Lot 15 Con 14		Lot 14 Con 13 B	
	Lot 11 Con 12 B		Lot 13 Con 14 B	
	Lot 13 Con 13 B		Lot 14 Con 14 B	
	Lot 13 Con 14 B			
	Lot 14 Con 14 B		Lot 9 Con 1 T	
	Lot 9 Con 1 T			
	2 roads		2 roads	
	2 roads			
Cultural landscapes disrupted	farm complexes		farm complexes	
			Lot 9 Con 12 B	
	Lot 12 Con 12 B		Lot 12 Con 12 B	
	Lot 10/11 Con 12 B		Lot 13 Con 12 B	
	Lot 10 Con 1 T		Lot 10 Con 1 T	
			Lot 13 Con 13 B	
	Lot 15/16 Con 14 B		Lot 15 Con 14 B	
	Lot 9 Con 1 T		Lot 15/16 Con 14 B	
	Lot 15 Con 13 B			
	Lot 14 Con 13 B			
	Lot 9 Con 12 B		Lot 9 Con 1 T	
			Lot 11 Con 12 B	
Associated built heritage features				
	38-214 Lot 13 Con 14		0	
	38-215 Lot 14 Con 14			

















APPENDIX 6.C EVALUATION DISCUSSION

Introduction

The following evaluation discussions describe the findings of the analysis and evaluation of the route segments. The discussions correspond to the listing of factors, criteria and indicators identified in Exhibit 4.15 of the Environmental Assessment Report. As noted in the Report, the factors, criteria and indicators, as well as the specific measures used to assess impacts for each indicator used in the analysis and evaluation, represent the most appropriate set of measurements to identify and assess the impacts associated with this project.

The analysis tables for each route comparison are also included in this Appendix.

Once the analysis was completed, trade-offs were identified and a preferred alternative was identified based on the Guiding Principles identified in Appendix 6.A

FACTOR/Criteria	North Route	South Route	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 			<p>The North route is closer to urban development areas and will likely carry higher traffic volumes during peak travel periods. Similarly, traffic will consume less energy with the North route, because a greater length of their travel is free flow.</p> <p>The North route has a high benefit to traffic operations and the South route has a low benefit.</p>
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 			<p>The North route has a high benefit to traffic volumes on the road network, because the North route itself will carry much of the study area traffic, thereby reducing volumes on much of the study area road network. The South route will carry lower traffic volumes than the North route, therefore volumes on the road network will not be reduced as much. In addition, a smaller area of the road network will benefit from the South route. Therefore, the South route has a low benefit to traffic volumes.</p> <p>Similarly, with traffic volumes on the road network being lower with the North route, the road network will realize improved operations over a greater area with the North route than the South route. The road network has a minor improvement in operations with the South route, and a high improvement with the North route.</p> <p>The proximity of the North route to existing and future development will result in lower impacts to the local road network during staging than the South route since long-distance trips will not have to travel as far on local roads.</p> <p>The North route produces a high benefit to network compatibility and the South route has a low benefit.</p>
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			<p>The South route has more extensive wetland crossings which result in higher construction and maintenance costs than the North route.</p> <p>The North route has a low cost impact and the South route has a moderate cost impact.</p>
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 			<p>The South route crosses stream with critical habitat (brook trout spawning) and several potential cold water streams. The North route mainly impacts warm water streams (pike and bass) and also crosses critical habitat in Pefferlaw Brook (walleye migratory run) but spawning is unlikely to occur at the crossing.</p> <p>South route results in severe impacts to critical cold water habitat. The North route has moderate impacts to warm water communities.</p>
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 			<p>The South route removes much more habitat and crosses more significant habitat units. The North route removes large areas of forest and disrupts significant species, but overall impacts are fewer and less severe.</p> <p>South route produces severe impacts to wildlife. The North route produces moderate impacts.</p>
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 			<p>The South route crosses large wetland units associated with significant streams and wildlife corridors through forested crossings. North route removes half as much wetlands and results in fewer crossings.</p> <p>South route produces a severe impact on wetlands, while North route produces a moderate impact.</p>
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			<p>Both alternatives remove large areas of forest however, the South route impacts larger and higher quality stands and includes crossing an Environmentally Sensitive Area and areas of sensitive riparian habitat (seepage areas).</p> <p>South route produces a severe impact, while North route produces a moderate impact.</p>
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			<p>The North route crosses large areas of highly permeable soil and relatively small areas of high ground water table. The South route crosses a much smaller area of highly permeable soil but a larger area of high ground water table.</p> <p>Both routes produce moderate impacts to ground water, but the South route produces slightly lower impacts.</p>
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	<p>No Earth Science ANST's in vicinity of route alternatives.</p> <p>Neither alternative produces an impact.</p>

















First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

NORTH ROUTE VS. SOUTH ROUTE

FACTOR/Criteria	North Route	South Route	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			<p>The South route produces lower overall community impacts because it results in fewer direct impacts to properties and has lower effects on social interaction.</p> <p>The North route results in high community effects and the South route produces moderate community effects.</p>
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 			<p>The South route impacts more farmstead residences, while the North route impacts more cluster residential areas. Overall, the North route impacts slightly more residences. Both routes produce low visual impacts but, the South route produce slightly lower impacts.</p>
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 			<p>The North route results in increased noise levels for a greater number of residences than the South route.</p> <p>The North route produces a moderate impact the South route produces a low impact.</p>
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			<p>The South route has a greater impact on soil capability than the North route; both routes have moderate impacts to farm operation units and linked operations.</p> <p>The South route produces high agricultural impacts. The North route results in moderate agricultural impacts.</p>
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 			<p>The North route has a higher potential to displace or disrupt existing businesses than the South route.</p> <p>The North route results in moderate impacts and the South route results in low impacts.</p>
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			<p>The North route impacts one Paleo-Indian site and impacts a greater area of land within 200 m of a water source than the South route. The South route has a greater impact on registered sites (Iroquoian villages).</p> <p>Both alternatives produce low impacts. The North route produces slightly lower impacts.</p>
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			<p>The North route displaces fewer cultural landscape units but disrupts slightly more landscape units than the South route.</p> <p>Both alternatives produce moderate impacts to heritage features. The North route produces slightly lower impacts.</p>

SUMMARY OF TRADE-OFFS

The North route avoids the majority of the large wetland complexes in the study area and is located primarily within developed lands around the major urban development areas (Keswick, Sutton and Pefferlaw). As a result, the North route generates higher social environment impacts, and lower agricultural, natural and cultural environment impacts than the South route. The North route also generates higher transportation benefits than the South route.

Overall, the North route generates lower impacts and higher benefits than the South route.

THEREFORE, THE NORTH ROUTE IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

NORTH ROUTE VS. SOUTH ROUTE

Evaluation Discussions

North vs. South

1.0 Transportation

1.1 Traffic Operations

Both alternatives increase capacity of the road network, and therefore provide a benefit to traffic operations.

The North route passes in close proximity to Keswick and Sutton, and through the urban area of Pepperlaw. This proximity to the major urban areas in the Town of Georgina is a large advantage of the North route, as this alternative can collect the long-distance traffic "at the source", particularly in the Keswick area. With the South route, Keswick traffic would access Highway 404 in the Queensville area. Traffic volumes served by the North alternative are higher than the South route (7200 vs. 5100 vehicles).

The rate of energy consumption on the freeway is generally less than that on the local road network, due to the speed reductions and stoppages at intersections. Energy usage is therefore less with the North alternative, since length of travel on the local road system is less than the South route.

The North route was considered to have a high benefit to traffic operations and the South route has a low benefit.

1.2 Network Compatibility

The North route has a high benefit to traffic volumes on the road network, because the North route itself will carry much of the study area traffic, thereby reducing volumes on much of the study area road network. The South route will carry lower traffic volumes than the North route, therefore volumes on the road network will not be reduced as much. In addition, a smaller area of the road network will benefit from the South route. Therefore, the South route has a low benefit to traffic volumes.

Similarly, with traffic volumes on the road network being lower with the North route, the road network will realize improved operations over a greater area with the North route than the South route. The road network has a minor improvement in operations with the South route and a high improvement with the North route.

The proximity of the North route to existing and future development will result in lower impacts to the local road network during staging than the South route since long-distance trips will not have to travel as far on local roads.

The North route produces a high benefit to network compatibility and the South route has a low benefit.

1.3 Cost

The topography and terrain along the South route requires more expensive construction methods than the North route. Higher costs are associated with rolling terrain and wetland crossings, which are more prevalent on the South route than the North route. The construction and maintenance costs associated with the South route are 22% and 27% higher respectively than the North route.

The North route has a low cost impact and the South route has a moderate cost impact.

2.0 Natural Environment

The North route crosses four (4) permanently flowing watercourses (Black River, tributary of the Black, Morning Glory Creek and Pefferlaw Brook), as well as twelve (12) non-permanently flowing watercourses. The North alignment further encroaches on one (1) flowing watercourse, eight (8) non-permanent ones and comes within 1 kilometer of Lake Simcoe.

Along this route there are four locations where critical spawning habitat for pike may be affected in both the Maskinonge and Black Rivers. Two migratory runs for pike and one run for walleye in Pefferlaw Brook are also crossed. The Black River, Morning Glory Creek and Pefferlaw Brook also support significant warm water communities (bass and sunfish).

The South route crosses seven (7) permanently flowing watercourses, including Pefferlaw Brook, Mount Albert Creek, Uxbridge Brook, the Black River and Black River tributaries, several of which have the potential to provide cold water habitat which is considered more sensitive to highway development than warm water systems. The South route encroaches on two other permanent streams. Eleven (11) non-permanently flowing watercourse are crossed by the South route with a further two (2) encroached upon.

There is one location along the South route where critical spawning habitat for brook trout may be affected in Uxbridge Brook. A migratory run of brook trout in Uxbridge Brook may also be crossed by this route. Sensitive fish communities that may be impacted by this route include sculpins which are indicative of cold water habitat conditions. Warm water habitat for bass is impacted by the South route.

The South route crosses potential brook trout spawning streams and others with cold water potential, whereas the North route mainly affects pike and bass habitats with crossings of potential walleye migratory runs which are considered to be less sensitive to highway development than the headwater streams. Therefore the North route is preferred over the South.

The North route crosses one (1) regional wildlife corridor at Pefferlaw Brook compared to the six (6) on the South route (Black River (2), Mount Albert, Zephyr-Egypt, Pefferlaw Brook, Uxbridge Brook). The North route crosses five (5) local wildlife corridors associated with the Maskinonge River, Sod Swamp-Black River, Vachell Swamp and Morning Glory Swamp, compared to the one (1) on the South route at the Gibson Hill Swamp.

Five (5) rare species are encountered along the North route as compared with two (2) on the South. The South route, however, contains twice as many indicator bird species of high quality forest habitat and 25% more species indicative of extensive swamp, resulting in a higher diversity for the South route.

The North route results in the removal of approximately 18 ha. of wetland and encroachment on 38 ha. of additional wetland. The South route removes approximately two and one half times more wetland area than the North route (49 ha.) and has a greater area of encroachment (49 ha.). The South route crosses four provincially significant wetlands (Black River, Mount Albert, Lower Pefferlaw Brook [twice] and the Zephyr Creek-Egypt Complex) as well as the Gibson Hill Swamp, also provincially significant, and Port Bolster Swamp where the two routes share a common alignment at the east end of the study area. The crossings of the Southern wetlands are large, causing fragmentation of the interior habitats important to reclusive wildlife. The North route crosses one provincially significant wetland at the Maskinonge Swamp as well as three (3) other locally significant swamps (Sod, Vachell, and Morning Glory), in addition to the two wetlands in common, described above. Marginal fragmentation results from this alignment (although realignment of this route at subsequent stages of the evaluation process has increased the level of impact to Sod Swamp).

The North route removes approximately 66 ha. of forest vegetation as compared with 86 ha. on the South route. The impacts of the South route tend to be through larger forest tracts resulting in greater impacts due to forest fragmentation and a reduction in the quality of interior habitat. Approximately 4 ha. of the Black River ESA is removed. Both routes remove approximately the same amount of regional forest and

have a similar number of rare species. Overall the South route contains more diverse vegetation and riparian forest associated with permanent headwater streams.

The North route encounters approximately 245 ha. of permeable soils and 18 ha. of shallow water table. The South route impacts on 170 ha. of permeable soils and 49 ha. of shallow ground water table. Both routes produce moderate impacts to ground water, but the South route produces slightly lower impacts than the North.

3.0 Social Environment

3.1 Community Effects

The North route has higher direct property impacts than the South route, in that the North route displaces more residences (69 vs. 53) and disrupts more properties (105 vs. 69).

The North route has a higher impact to community cohesion, since it has a perceived severing effect on strong community links between lake communities and rural communities in Georgina. In particular, the North route has a perceived severing effect on strong residential cluster links from Sutton-Elm Grove, Sutton-Baldwin, and north Pepperlaw/Port Bolster-south Pepperlaw. The South route severs rural community links in East Gwillimbury and Uxbridge.

The South route has a higher impact to community stability, since it passes through a stable rural area, whereas North passes in close proximity to non-stable areas in transition (Keswick, Sutton, Pepperlaw).

The South route has a higher potential for disrupting community mobility (10 roads closed and 25 residences affected vs. 2 roads closed and 23 residences affected on the North route). The North route has a higher potential to disrupt emergency services (between 14 and 20 homes potentially affected) than the South route (between 3 and 22 homes potentially affected).

The North route results in high community effects, and the South route produces moderate community effects.

3.2 Aesthetics

More farmstead residences are exposed to the highway with the South route (107 vs. 26), while more cluster residential areas are impacted by the North route (132 residences impacted vs. 8 with South route). Overall, the North route impacts more residences.

Both routes produce low visual impacts but the South route produces slightly less impacts.

3.3 Noise

Due to its proximity to existing urban areas, the North route impacts more receivers (320 residences affected) than the South route (70 residences affected). The impacts with the North route include 273 residences with moderate noise impacts (noise level increases between 6 and 10 dBA), 46 residences with high noise impacts (noise level increases between 11 and 15 dBA), and one significant impact (greater than 15 dBA increase in noise levels).

The South route noise impacts include 36 moderate impacts, 23 high impacts and 10 significant impacts.

The North route produces a moderate noise impact and the South route produces a low noise impact.

4.0 Economic Environment

4.1 Agriculture

South has a high negative impact to agriculture while North has a moderate effect and is therefore the preferred alternative. The South route displaces approximately twice the capital investment as does the North route. South displaces four high value, two medium value and twenty low value farms, while North displaces two high value, two medium value and ten low value farms. However, North produces more diagonal and horizontal severances. Both routes isolate approximately the same number of fields from farm complexes. Overall, the negative effect to farm operation units is moderate for both route alternatives.

North displaces approximately two-thirds the field crops, organic and Class 1-2 soils as does South. Both routes displace approximately equal but relatively minor areas of pasture or grazing land. In general, South has a high negative impact and North has a moderate negative impact on soil capability.

South has a slightly greater impact on linked farming operations, adversely affecting 6 farms, including a high impact to one farm. Five farms experience isolation within linked operations by North.

4.2 Commercial/Industrial

By avoiding the existing urban areas, both routes minimize direct impacts to businesses. The North route displaces more businesses (5 vs. 2 on the South route) and disrupts more businesses (3 vs. 0).

The North route results in moderate impacts to businesses, while the South route produces low impacts.

5.0 Cultural Environment

5.1 Archaeology

The North route impacts one Paleo-Indian site and impacts a greater amount of land within 200 m of water than the South route. The North route has a moderate potential impact on archaeological remains.

The South route also has a moderate potential impact on archaeological remains. The South route impacts one Paleo-Indian site but has less impact than the North route, on land within 200 m of water. However, the South route traverses the main cluster of Iroquoian village sites and associated cemeteries and, consequently, has a greater potential impact on undiscovered Iroquoian sites and cemeteries (i.e. Native burials).

5.2 Historical

























The North route displaces 14 farm complexes and 5 roadscares and disrupts 43 farm complexes, 7 roadscares and 2 historical settlements. The South route displaces 25 farm complexes and 7 roadscares and disrupts 39 farm complexes, 8 roadscares, 2 historical settlements and 1 cemetery.




The North route displaces fewer "very important" cultural landscapes but disrupts slightly more "very important" cultural landscapes than the south route.

Both are of moderate impact as they involve displacement and disruption effects.

Trade-offs - North vs. South






















Reducing impacts to the natural environment was considered of equal importance to reducing impacts to the social environment. The North route generated higher impacts to the social environment, while the South route generated significantly higher impacts to the natural environment. The North route also generated higher transportation benefits and lower impacts to the economic and cultural environments, as well as lower costs than the South route, and was therefore recommended as the preferred route.

FACTOR/Criteria	B1	B2	B3	COMMENT
1. TRANSPORTATION				
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 				<p>B1 has higher energy usage than the other route alternatives primarily due to the greater distance between B1 and the major trip generating zones (Keswick and Sutton).</p> <p>B2 and B3 provide a high benefit to traffic operations. B1 provides moderate benefits to traffic operations.</p>
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 				<p>B3 is the closest to the major trip generating zones (Keswick and Sutton), compared to B2 and B1. This results in lower impacts to the area road network, because vehicles travel a relatively shorter distance on local roads. Traffic volumes on road sections connecting the highway to the major zones will meet or exceed capacity. Volumes on the remaining road sections will be reduced, compared to the do-nothing alternative. B1 and B2 are located further away from the major trip generating zones, and therefore have less of a benefit to the road network, with B1 providing the least benefit to traffic volumes on parallel/crossing roads.</p> <p>Similarly, for traffic operations, B3 produces a greater benefit to the area road network since traffic volumes are reduced over a greater area. The reduction in traffic volumes contributes to an improvement in traffic operations on the area road network. B1 provides the least benefit to traffic operations on parallel/crossing roads.</p> <p>B3 has a high benefit to network compatibility, B2 has a moderate and B1 has a low benefit.</p>
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 				<p>B1 has a much higher cost impact than B2 and B3 because B1 requires additional structures over wetlands.</p> <p>B2 and B3 have low cost impacts with B2 having slightly lower impacts. B1 has a high impact.</p>
2. NATURAL ENVIRONMENT				
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 				<p>All three alternatives cross/encroach on pike habitat. B1 sustains slightly greater impacts to pike habitat due to lengthy and more numerous encroachments.</p> <p>Routes B1, B2, B3 all produce moderate impacts to fisheries, but B1 affects a larger area of critical habitat (pike spawning).</p>
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 				<p>B1 has multiple crossings of large habitats, severance of a regional corridor and displaces two rare species. B2 and B3 have similar effects to local crossings and large habitat areas, but B3 has the potential to displace a provincially rare species.</p> <p>B1 produces high impacts while B2 produces moderate impacts slightly less severe than B3.</p>
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 				<p>B1 crosses extensive wetland, much of it marsh; B2 crosses low areas of wetland with low encroachment on wetland areas (through forests); B3 has no wetland crossings but small encroachments through soil with high interaction with ground water</p> <p>B1 produces severe impacts, B3 moderate impacts, and B2 produces low impacts.</p>
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 				<p>B1 has low forest area lost but crosses through significant vegetation including an ESA. B3 has moderate forest lost through significant vegetation units. B2 has high forest area lost but crosses through less sensitive forest patches.</p> <p>B1 and B3 produce similar moderate impacts with B1 being slightly more so, B2 produces low impacts.</p>
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 				<p>B1 has minor areas of highly permeable soil and areas sensitive to contamination, but has relatively large areas of high ground water table.</p> <p>B2 has minor areas of highly permeable soil and areas sensitive to contamination</p> <p>B3 has minor areas of highly permeable soils, areas sensitive to contamination and high ground water table.</p> <p>No permits to take water occur near any of these routes</p> <p>B1 produces a moderate impact. B2 and B3 both produce low impacts with B2 being slightly more preferred.</p>
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Impact	<p>All three routes have no Earth Science ANST's within 300 m of the route.</p> <p>No Impact.</p>

 First Preference
  Second Preference
  Third Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B (B1 vs. B2 vs. B3)

FACTOR/Criteria	B1	B2	B3	COMMENT
3 SOCIAL ENVIRONMENT				
3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 				<p>B2 has the highest overall impact as it effects the highest number of residences as well as having the highest overall impact to community cohesion, stability and character. Overall, B1 & B3 produce similar impacts but B3 has slightly higher impacts.</p> <p>B2 produces a high impact. B1 and B3 produce moderate impacts with B1 being slightly preferred.</p>
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 				<p>B2 visually impacts more residences.</p> <p>B2 produces a high impact. B1 and B3 produce low impacts with B1 being slightly preferred.</p>
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 				<p>B3 has the highest impact followed by B2 and B1 respectively.</p> <p>B3 produce a high impacts. B2 produces moderate impacts. B1 produce low impacts. preferred.</p>
4 ECONOMIC ENVIRONMENT				
4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 				<p>B3 has the greatest impact to operational viability, soil capability and linked farm operations. B2 has similar but slightly less impact than B3. B1 has the lowest impact.</p> <p>B1 results in a low agricultural impact. B2 and B3 produce a moderate impact, with B2 slightly preferred.</p>
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 				<p>B2 has the highest impact as it displaces the airport.</p> <p>B2 and B1 produce a high impact. B3 produces a moderate impact.</p>
5 CULTURAL ENVIRONMENT				
5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 				<p>B1 has the least amount of land within 500 metres of beach ridge and has no direct impacts to known sites. While B1 does have more land within 200 m of water impacted than B2, B1 has considerably less land impacted than B3.</p> <p>B1 produces a low impact. B2 and B3 produce similar moderate impacts.</p>
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 				<p>B3 is considered to have the least adverse impact having the lowest number of cultural landscape units displaced. B3 has slightly greater cultural landscape unit disruption effects than B1 and slightly less disruption effects than B2.</p> <p>All Alternatives produce moderate impacts, but B3 is slightly preferred.</p>

SUMMARY OF TRADE-OFFS




Alternative B1 follows the border between developed and natural areas in central Georgina and avoids the existing communities. As a result, this alternative generates the lowest social environment impacts and the greatest impact to the natural environment, particularly to the Black River Wetland Complex. B1 also provides the lowest transportation benefits.

To reduce impacts to the natural environment, Alternative B2 was located primarily within the developed lands outside the natural areas. As a result, this alternative generates the highest social environment impacts, particularly through Baldwin, and the lowest natural environment impacts. The transportation benefits with B2 are greater than those of B1.

Alternative B3 was located alongside the boundaries of the major development areas in Georgina (Keswick and Sutton). By avoiding the Black River Wetland Complex, the impacts to the natural environment with B3 are less than those of B1, but slightly greater than those of B2. As well, by passing between Baldwin/Elm Grove and Sutton, the impacts to the social environment are less than those of B2, but slightly greater than those of B1. B3 also generates the greatest benefits to transportation.

Overall, B3 generated the least impacts and the highest benefits.

THEREFORE, B3 IS PREFERRED

 First Preference
  Second Preference
  Third Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B (B1 vs. B2 vs. B3)

B1 vs. B2 vs. B3

1.0 Transportation

1.1 Traffic Operations

All three alternatives provide a benefit to traffic operations by increasing the capacity of the road network. The three alternatives are generally situated in the same portion of the study area and would generally serve the same traffic volumes. With B1, commuter trips generated by Sutton would be required to travel a greater length on the local road network between the highway and Sutton. This travel on the local road network is not as efficient as highway travel, and results in 10% higher energy usage with B1 than the other alternatives.

B2 and B3 provide a high benefit to traffic operations. B1 provides a moderate benefit.

1.2 Network Compatibility

Copy from Bubbles

1.3 Cost

B2 had the lowest costs, with B3 having slightly higher construction and maintenance costs (between 16 and 19% higher, respectively) than B2. B1 carried the highest construction and maintenance costs (between 7 and 60% higher than B2), due primarily to additional structures required for a wetland crossing west of Highway 48.

B2 and B3 have low cost impacts with B2 having slightly lower impacts. B1 has a high impact.

2.0 Natural Environment

Both routes B1 and B3 contain similar areas of crossing of permeable soils (156 and 152 ha., respectively), whereas B2 contains 130 ha.. The impacts to the shallow ground water table parallel those described for the wetlands with B1 having an impact almost double that of B3, and 5 times greater than B2. B2 and B3 both produce low impacts to the ground water with B2 being slightly better than B3.

All three route alternatives follow a common segment that crosses two (2) and encroaches upon four (4) non-permanently flowing watercourses. The three routes also cross the main branch of the Maskinonge River and may affect pike spawning. Pike spawning is known to occur in the lower portion of the river but the use of the upstream tributaries by pike has not been confirmed. B3 crosses the river at a lower point in the watershed than B1 or B2 and therefore may be more likely to impact on the potential pike use.

The routes all cross and encroach on several non-permanently flowing watercourses (tributaries of the Maskinonge and Black Rivers). Ten (10), two (2) and four (4) watercourses are crossed by B1, B2 and B3, respectively. Route B1 encroaches on three (3) non permanently flowing watercourses including 1,200 m along Zephyr Creek which is considered to provide habitat for warm water species. Routes B2 and B3 encroach on one (1) and three (3) non-permanently flowing watercourses. All three alternatives cross the Black River which may impact on critical pike spawning habitat.

All three routes may impact significant species (pike) and potentially critical spawning habitat for pike in the Black River. Alternative B2 may also affect bass communities. Routes B1, B2 and B3 all produce moderate impacts to fisheries, but B1 affects a larger area of potentially critical spawning habitat, and has a greater number of overall crossings.

Route alternative B1 crosses one (1) regional wildlife corridor at the Black River and two (2) local corridors associated with the Vachell Swamp south. Route B2 crosses four (4) local corridors including the Maskinonge River, Sod Swamp, Black River south and Vachell Swamp south. B3 crosses three (3) of these local wildlife corridors with the exception of the Sod Swamp.

Four (4) rare species are encountered on route B1 as well as numerous other species indicative of large interior forest habitats and large swamps. Marsh habitat associated with B1 at the Maskinonge Wetland provides habitat for the Marsh Wren, an indicator species of cattail marsh habitats which is not common in the study area. Two (2) rare species were encountered on B2 and three (3) on B3, one of which is provincially rare. Diversity indices calculated for each of the routes (GLL 1997) were very similar between the routes (27.9 at B1, 25.6 at B2 and 28.4 at B3).

Route B1 results in the loss of approximately 25 ha. of wetland, comprising roughly equal portions of swamp and marsh. By comparison, B2 results in the removal of approximately 5 ha. of wetland and B3 removes 11 ha.. B1 also has the largest interaction with ground water associated with the wetlands. B1 encroaches upon a large area of wetland, approximately 54 ha., which is almost double that of the other two routes. The greatest effect of the B1 crossing is on the provincially significant Black River Complex, as well as an edge effect to the provincially significant Zephyr-Egypt Wetland Complex. Routes B2 and B3 cross the provincially significant Maskinonge Wetland. B2 encroaches on Vachell Swamp, while B3 crosses Sod Swamp and Vachell Swamp, resulting in fragmentation.

Route B1 crosses approximately 41 ha. of forest in large patches and includes about 7 ha. of the Brown Hill ESA and 2 ha. of Regional Forest. The largest forest area removed is on B2, where 62 ha. is lost and results in fragmentation. B3 has losses of about 48 ha. of forest.

Rare plant species are encountered on both B1 and B3, but not B2. B1 had the greatest diversity of vegetation followed by B3, then B2.

In summary, B1 is the most sensitive route because it crosses more significant wildlife corridors, has very diverse vegetation including large areas of marsh habitat suitable for the Marsh Wren, and results in the removal of twice as much wetland. While the forests crossed by this route are smaller in individual area than patches encountered by the other routes, the affected patches are high quality habitat including ESA and Regional Forest areas. B3 removes more wetland than B2, but B2 results in more forest loss, of which approximately 14 ha. is Regional Forest. In addition to wetland lost on the common segment of B2 and B3, B3 also crosses Sod Swamp and Vachell Swamp, causing fragmentation of these units. The vegetation on B2 is generally less diverse, and no rare species are encountered. Bird diversity indices for B1 and B3 are close to the overall index value for the study area, while B2 is lower.

3.0 Social Environment

3.1 Community Effects

This portion of the study area features the urban areas of Sutton and Keswick, as well as the rural communities of Elm Grove and Baldwin. Links between these communities were identified and verified through public consultation. Through the provision of grade separations, the road connections between communities will be maintained. However, it was noted several times during the consultation process that it may be perceived that the highway corridor severs a portion of a larger community by creating a disruption to social links which currently exist or would likely exist in the future.

B1 generally avoids all the communities in this portion of the study area, passing south of Baldwin, and has the lowest impact on community cohesion. B1 also has the least residential displacements (25) and property disruptions (46). B1 has a high impact on community stability, since it passes through a stable rural area, and a moderate impact to community character, since it does not displace any character-defining features of the area. All alternatives generate similar impacts to community mobility and potential disruptions to emergency services.

B2 passes through Baldwin, severing this community, as well as the Baldwin-Elm Grove and Baldwin-Sutton community links. B2 has a high impact to community cohesion and character, due to its impacts to Baldwin. B2 also has a high impact to community stability, since it passes through a large stable rural area. This alternative has the most residential displacements (33) and more property disruptions (65) than B1.

B3 passes in close proximity to existing urban areas of Keswick and Sutton, which are growth areas in transition. B3 therefore has moderate impacts to community stability. This alternative has a perceived severing effect on the Sutton-Elm Grove community link, although access is maintained, and has a high impact to community cohesion. Since the route passes in close proximity to non-stable development areas in transition, this alternative has a moderate impact to community stability. B3 displaces 27 residences and disrupts 69 properties.

Due to its impacts to Baldwin, B2 has high community effects, while B1 and B3 have moderate community effects. B1 has slightly lower effects than B3, since B1 has lower property disruptions and a much lower impact to community cohesion.

B2 results in high community effects, while B1 and B3 result in moderate effects. B1 has slightly lower effects than B3.

3.2 Aesthetics

B1 and B3 have similar low aesthetic impacts (28 and 31 residences affected, respectively), with B1 having slightly lower impacts. B2, which passes through Baldwin has high aesthetic impacts (56 residences affected).

3.3 Noise

B3 has high noise impacts, due primarily to its proximity to the Elm Grove Trailer Park. The impacts with B3 include 59 residences with moderate noise impacts (noise level increases between 6 and 10 dBA), 42 residences with high noise impacts (noise level increases between 11 and 15 dBA), and one significant impact (greater than 15 dBA increase in noise levels).

B2, which passes through Baldwin has moderate noise impacts (52 residences with moderate impacts, 26 residences with high impacts, 0 residences with significant impacts), while B1 has low noise impacts (20 residences with moderate impacts, 13 residences with high impacts and 1 residence with significant impacts).

4.0 Economic Environment

4.1 Agriculture

Route B1 has the lowest impact and is the preferred alternative. Route B3 has the highest impact for each of the three agricultural indicators and is the least preferred alternative. All routes displace one high value farm, and Route B3 also displaces one medium value farm. Route B3 has the greatest impact with respect to the orientation of severances which create many horizontal and vertical bisections of large agricultural expanses. Therefore, Route B3 also has the highest impact in terms of isolation of fields from farm buildings. Route B1 has the fewest horizontal and vertical severances, having approximately half the number of Route B3, and has the least impact on isolation of working fields from farm complexes. Route B2 has an intermediate effect with respect to severances and isolation of working fields compared to the other two alternatives considered.

Routes B3 and B1 displace less than 6 ha. of specialty crops, which is considered relatively minor. Route B3 displaces a moderate amount of field crops, organic soils and Class 1-2 soils. Route B1 displaces approximately half the amount of Route B3, and Route B2 is intermediate in effect.

Route B3 displaces three linked farming operations, having a moderate impact on two of these. Routes B1 and B2 each have minor impacts on one linked farming operation.

4.2 Commercial/Industrial

B2 has the highest impacts, since it displaces the Baldwin Airfield, and an associated business which uses the airfield. B1 displaces more businesses than B3 (3 vs. 2) and disrupts a business, while B3 does not disrupt any businesses.

5.0 Cultural Environment

5.1 Archaeology

B3 impacts one Paleo-Indian site and the greatest amount of land within 200 m of water. B3 has the highest potential impact on archaeological remains.

Neither B1 nor B2 impact a known archaeological site. Both have a moderate potential impact on archaeological remains but B2 has a greater amount of land within 500 m of an ancient beach ridge (i.e. higher Paleo-Indian site potential).

5.2 Historical

B3 displaces 2 roadscares and 9 farm complexes and disrupts 23 farm complexes and 6 roadscares. B2 displaces 4 roadscares and 9 farm complexes and disrupts 23 farm complexes, 1 historical settlement, 1 cemetery and 6 roadscares. B1 displaces 5 roadscares, 1 rail line (abandoned) and 8 farm complexes and disrupts 21 farm complexes, 1 historical settlement and 4 roadscares.







B3 is considered to have the least adverse impact having the lowest number of "very important" and "important" cultural landscape units displaced. B3 has slightly greater cultural landscape unit disruption effects than B1 and slightly less disruption effects than B2.

All are of moderate impact as they involve displacement and disruption effects.

Trade-offs - B1 vs. B2. vs. B3

The preferred alternative was B3, since it generates the highest transportation benefits, while generating the least overall impacts. B2 generates the lowest natural environment impacts and the highest impacts to the social environment. B3 generates only slightly higher impacts to the natural environment, while generating much lower impacts to the social environment and higher transportation benefits.

Similarly, B1 generates the lowest impacts to the social and economic environments, although B1 is only slightly preferred over B3 on several criteria. B3 generally generates lower natural environment impacts with much lower costs and much higher transportation benefits.

FACTOR/Criteria	B North	B South	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	No significant differences in traffic operations between the two routes. Both alternative provide a low benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	Both alternatives can be upgraded to three lanes per direction, which is sufficient for the long-range (30 years +) planning horizon. B North, however, cannot be upgraded to four lanes per direction, due to the reduced median width at the Pefferlaw Brook crossing. Since a fourth lane is not required in the foreseeable future, the two routes were considered to provide the same benefits to Network Compatibility. Both alternative provide a low benefit to network compatibility.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			B-North carries a higher construction cost than B-South due primarily to higher property costs. B-North has a moderate cost impact and B-South has a low cost impact.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	SAME	SAME	Both alternatives produce similar impacts to critical habitat (walleye migratory run and bass spawning). Both alternatives have similar impacts to Lake Simcoe. Both alternatives produce similar moderate impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have wildlife species and habitat. 			The habitat is generally better in B South route; the presence of area-sensitive species indicates higher functioning habitat on the B South route. B South also results in a greater loss of habitat area. B North produces low impacts to wildlife, while B South produces moderate impacts.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 	No Impact	No Impact	No wetlands were crossed or encroached upon by either corridor Neither alternative produces an impact.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			A large forested area (22 ha) is crossed in B South corridor which supports a large number of significant flora and fauna. B North produces a low impact on vegetation and B South produces a high impact.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 	SAME	SAME	Relatively small areas of highly permeable soil crossed. No areas of shallow ground water table. No permits to take water. Relatively small areas sensitive to ground water contamination. Neither alternative produces a significant impact.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Earth Science ANSI's in vicinity of alignment. Neither alternative produces an impact.

















First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED PEPPERLAW CROSSING (B NORTH VS. B SOUTH)

FACTOR/Criteria	B North	B South	COMMENT
3 SOCIAL ENVIRONMENT			
3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			<p>Both alternatives sever the Pefferlaw community and therefore have an extreme negative impact to this community. However, in choosing between the two alternatives B North contains more of the impacts within the existing Highway 48 corridor area, rather than introducing a new corridor. Therefore, B North is preferred.</p> <p>Route B North produces a moderate impact to community effects and B South produces a high impact to community effects.</p>
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 			<p>B North visually impacts more residences.</p> <p>B North produces a moderate aesthetic impact and B South produces a low impact.</p>
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 			<p>Although B North impacts slightly more residences than B South, the impacts associated with B South are more severe. Impacts along B North are less due to its proximity to the Highway 48 Corridor.</p> <p>Both alternatives produce moderate impacts but B North is slightly preferred.</p>
4 ECONOMIC ENVIRONMENT			
4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			<p>B North has slightly higher impacts to operational viability than B South. B South has slightly higher impacts to soil capability.</p> <p>Both alternatives produce a low impact to agriculture, but B South produces slightly lower impacts.</p>
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 			<p>B North has higher displacement and disruption impacts and, therefore, is worse than B South.</p> <p>Route B North produces a moderate impact to commercial/industrial and B South produces a low impact to commercial/industrial.</p>
5 CULTURAL ENVIRONMENT			
5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			<p>Both alternatives have virtually identical impacts except that B North is further away from a registered site.</p> <p>Both alternatives produce low impacts but B North is slightly preferred.</p>
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			<p>B South displaces fewer cultural landscape units than B North.</p> <p>B South produces low displacement impacts. B North produces moderate impacts.</p>

SUMMARY OF TRADE-OFFS

The impacts associated with B North are primarily focussed on the existing highway corridor. This alternative would impact existing businesses along Highway 48 and would require additional bridge construction to maintain access to lands east of the Pefferlaw Brook.

With B South, a new highway corridor would be constructed south of Highway 48. This alternative would result in a new corridor through Pefferlaw, which would have higher community impacts than B North, and impacts to the natural areas east of the Pefferlaw Brook.

The impacts to the community as a whole and the natural areas east of Pefferlaw Brook were considered of greater importance than those to the businesses along Highway 48.

THEREFORE, B North IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED PEFFERLAW CROSSING (B NORTH VS. B SOUTH)

B North vs. B South

1.0 Transportation

1.1 Traffic Operations

Both routes offer similar benefits to transportation operations.

1.2 Network Compatibility

Both routes offer similar benefits to the road network. Both routes can be upgraded if warranted, from four lanes to six to meet future traffic needs. Due to the lateral clearance restrictions associated with the service road structure over the Pefferlaw Brook, B North cannot be easily upgraded to an eight lane facility. Since four lanes will provide sufficient capacity for the long-range (30 years) planning horizon, both routes have similar benefits to the road network.

1.3 Cost

The construction costs associated with B North are 33% higher than B South while the maintenance costs of b North are slightly higher (17%) than those of B South. The higher costs with B North are associated with the additional roadworks required to provide access to lands along Highway 48 east of Pefferlaw Brook and higher property costs.

2.0 Natural Environment

Both route alternatives B North and B South cross Pefferlaw Brook, a warm water, permanently flowing stream. Bass and longear sunfish are reported to spawn downstream of the crossings, and walleye to spawn upstream, migrating through the area to reach their spawning grounds. Both of these alternatives are within 2 kilometers of Lake Simcoe, with B North approximately 1 km north and B South approximately 2 km south.

Both B North and B South produce similar and moderate impacts to fish and aquatic habitat.

Both route segments B North and B South cross one (1) local wildlife corridor associated with the Pefferlaw Brook. Each route encounters 2 rare bird species each and the crossings would impact on the habitat for three of the four species. A number of indicator bird species are encountered on both routes, however the overall diversity of breeding birds on B South was almost four (4) times higher than that encountered on B North as evidenced by the Simpson's Diversity Index results reported in the Natural Environment Technical Report (GLL 1997). Further, indicator bird species present on B South are characteristic of high quality woodlots.

No wetlands are crossed by either route alternative and therefore no impacts are expected.

On Route B North less than 1 ha. of vegetation is affected whereas 22 ha. is lost over B South, including a large area considered to be old growth forest, as well as upland deciduous, mixed and cedar-hemlock forest units which are rarely encountered in the larger study area. Overall, B South contained vegetation units and wildlife communities which are more diverse and of higher quality compared with B North.

No earth science ANSIs or permitted water taking are present on either Route segment. Approximately the same area of permeable soils are found on both route segments, 33.5 ha. on Route B North and 32 ha. on B South, resulting in similar impacts on either route.

3.0 Social Environment

3.1 Community Effects

B North results in higher residential displacements (15 vs. 13) and property disruptions (15 vs. 9) than B South. The majority of the property impacts with B North are primarily located along the south side of the Highway 48 corridor in the vicinity of the Pepperlaw Brook. B South is located in a less developed section of Pepperlaw, between the business area south of the CN tracks and the highway commercial/residential node along Highway 48.

While the displacement of existing development is a significant impact, the impacts to community stability and character are higher with B South. B North more or less requires widening of the existing highway corridor (Highway 48) which crosses through Pepperlaw. B South, however, represents a new corridor crossing through the community. Potential impacts to community stability and character are higher with B South, because the widening of the existing highway corridor is less of an impact to community stability and character than adding a new highway corridor through a stable low-intensity development area.

B North has a moderate impact to the community, while B South has a high impact.

3.2 Aesthetics

Aesthetic impacts with B North are substantially higher than B South (178 residences potentially affected by B North vs. 73 with B South) due primarily to the proximity of B North to Green Acres Trailer Park. B South has less of an impact to this facility, due to the screening effects of a large woodlot between the park and the route.

3.3 Noise

Noise impacts are determined by considering noise levels at receiver locations with the new highway, and comparing them to noise levels that would be experienced if the new highway was not constructed. Without the new highway, noise levels along the Highway 48 corridor through Pepperlaw would increase as traffic volumes increased. The noise effects of B North to adjacent lands would generally not be significant due to the proximity of the new route to Highway 48.

B South crosses lands removed from the effects of the Highway 48 corridor. The relative increase in impacts to adjacent lands along B South will generally be much higher.

Both alternatives have noise impacts to Green Acres Trailer Park. With B North, almost 117 receivers, most of them within the trailer park, may experience noise level increases of 6 to 10 dBA. With B South, 110 receivers, most of them within the trailer park, may experience noise level increases of 11 to 15 dBA, and 17 receivers may experience noise level increases of greater than 15 dBA (a significant increase).

While both alternatives have moderate noise impacts, the noise impacts with B North are slightly less than those of B South.

4.0 Economic Environment

4.1 Agriculture

Route B South is slightly preferred over Route B North since it displaces fewer farm operations. The level of impact for both routes are, however, relatively minor compared to other route segments. Neither Route B North nor Route B South displace any high or medium value farms. Route B North displaces two low value farm operations and separates minor amount of field crops and pasture/grazing land from farm complexes. Route B South only displaces one low value farm operation.

The existing and future agricultural use in this vicinity is minimal as most of the land is comprised of small land holdings that are or will be developed in the near future. Minor amounts of soils with agricultural capability are displaced, although a greater amount of Class 1 and 2 soils are displaced in Route B South.

Neither route alternative results in impacts to known linked operations.

4.2 Commercial/Industrial

B North displaces Quinn's Marina, located on the west bank of the Pepperlaw Brook immediately south of Highway 48. In addition, B North disrupts a lumber business on Pepperlaw Road (minor property taking). Both routes disrupt two businesses on Durham Road 23 (minor property taking).

B North has a moderate impact to commercial/industrial businesses, while B South has a low impact.

5.0 Cultural Environment

5.1 Archaeology

B South is closest to a large Middle Woodland site but neither B South nor B North directly impacts the site. Both routes have a moderate potential impact on archaeological remains. B North crosses Pepperlaw Creek at a more urban section than B South and, therefore, has less potential archaeological impact at this location than B South.

5.2 Historical

B North displaces 3 farm complexes and disrupts 1 farm complex, 1 waterscape, 1 historical settlement and 1 railscape. B South displaces 1 farm complex and disrupts 2 farm complexes, 1 waterscape, 1 historical settlement and 1 railscape.

B South is considered to have the least adverse impact having fewer "very important" cultural landscape units displaced, but slightly more cultural landscape units disrupted than B North.

B North is of moderate impact as it displaces 3 "very important" cultural landscape units (i.e. farm complexes). B South displaces only 1 "very important" cultural landscape unit and is of low impact. Both involve similar disruption effects.

Trade-offs - B North vs. B South

The community of Pepperlaw is primarily oriented north-south, parallel to the Pepperlaw Brook, while Highway 48, Ontario Hydro and CN cross Pepperlaw in an east-west direction. The community has developed up to, and in the case of Ontario Hydro, under, these crossings. B North runs adjacent to Highway 48 through Pepperlaw, essentially widening the existing east-west corridor. As a result, B North displaces development immediately adjacent to the existing Highway 48 corridor. South of Highway 48, B North impacts a residential cluster west of Pepperlaw Road, Quinn's Marina, a proposed residential subdivision (Pepperlaw Estates), Green Acres Trailer Park and several individual residences. North of Highway 48, several residences and a restaurant are impacted by the widened corridor. In addition, a service road is required to maintain access to Riverbank Drive and lands south of Highway 48. The additional property required for the service road increases the impacts to development on the south side of Highway 48.













The banks of the Pepperlaw Brook in the vicinity of the B North crossing have been disturbed by the existing Highway 48 crossing and the marina. The existing development has removed much of the riparian natural environment on both sides of the Brook, both north and south of Highway 48.

B South creates a new east-west corridor through a residential area of Pepperlaw south of the Cedardale Camp. This area is presently occupied by single family dwellings. The banks of the Brook in the vicinity of the B South crossing and the forested lands east of the Brook are essentially undisturbed and provide habitat for a large number of significant flora and fauna.

The impacts to Pepperlaw associated with either the B North or B South alternatives are a significant disadvantage of both routes. With the B North route, however, the impacts to the community of Pepperlaw are confined to an area currently used as a transportation corridor; properties in this area are currently exposed to the effects of a transportation corridor (for example, this area has a higher ambient noise level than the area around the B South crossing). Although extending Highway 404 along the B North alignment would increase such effects, the magnitude of the increase would not be as great as for the area of B South, which is not currently as exposed to these effects.

The B South route generates a greater impact to the community of Pepperlaw, as a result of the new east-west crossing through the community. The B South alternative would create a new transportation corridor through the community, introducing the effects of such a corridor to an area of the community where these effects presently do not exist. The community as a whole, therefore, would be impacted by such an alternative. In addition, the disadvantages of the B South route alternative include property impacts to the residential area west of the Brook, and natural area east of the Brook.

In considering the differences in the impacts to Pepperlaw associated with the B North and B South route alternatives, the Project Team identified B North as the preferred route alternative, due to the lower impacts to the community as a whole generated by this route.

FACTOR/Criteria	C1	C2	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 			C2 has a higher energy usage because it is longer than C1. The terrain on C1 is more rolling, increasing potential for slow moving vehicles. C1 has a moderate benefit to traffic operations, C2 has a low benefit.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes. Both routes produce low benefits to network operations.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			C2 carries generally higher costs than C1 because C2 is slightly longer and requires additional structures over wetlands. Both routes have low cost impacts, with C1 having slightly lower impacts.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 			Both routes cross potential critical habitat (brook trout migratory run) (similar impacts). C1 also impacts a sensitive fish (sculpin) community and potential critical habitat (brook trout spawning). C1 potentially impact the habitat of a vulnerable species. C2 produces low impacts to fisheries and aquatic habitat while C1 produces high impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 			C1 and C2 both cross high-quality habitat, with C1 displacing slightly more rare species and isolating a small wetland unit (interferes with wildlife use). C1 and C2 both produce high impacts to wildlife, with C1 being slightly more severe.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 	SAME	SAME	Greater wetland area was crossed by C2, however, this wetland has already been segmented. The wetland crossings on C1 are smaller, but functionally more severe as they represent new impacts. Therefore, the impacts to wetlands are similar for both alternatives. Both alternatives produce a similar high impact to wetlands.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			ANSI and ESA areas crossed by route C1. Larger number of significant species found in C1 corridor. C2 produces a moderate impact while C1 produces a high impact.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			Both routes cross relatively small areas of highly permeable soil and areas sensitive to contamination. C1 crosses relatively small area of high ground water table and C2 crosses relatively large area of high ground water table. One permit to take water near C1. C1 produces a low impact to ground water while C2 produces a moderate impact.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Earth Science ANST's in vicinity of alignment Neither alignment produces an impact.















First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED C (C1 VS C2)

FACTOR/Criteria	C1	C2	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			C1 and C2 produce similar impacts but C1 is slightly preferred because it has less of an impact on emergency response time and recreational disruption (snowmobile trails). Both alternatives produce low impacts but C1 produces slightly lower impacts.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 			C2 visually impacts more farmstead residences. C1 and C2 both produce a moderate aesthetics impact but C1 produces slightly lower aesthetic impacts.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 			Both alternatives produce similar impacts but C1 results in slightly higher impacts. C1 and C2 produce a moderate noise impact but C2 is slightly preferred.
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			C2 produces slightly higher operational viability impacts, and slightly lower impacts to linked farming operations. Soil capability impacts are equal. Both routes produce moderate impacts to agriculture, but Route C1 produces slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	No Impact	No Impact	No impacts. C1 and C2 produce no impact to commercial/industrial.
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			C1 and C2 both pass very close to an unregistered Iroquoian village location. C1 follows the beach ridge and impacts far more land within 200 m of water than C2. C1 produces a high impact. C2 produces a low impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			Both routes displace the same number of cultural landscape units, but C2 displaces fewer farm complexes. Both alternatives produce a moderate impact but C2 produces slightly lower displacement effects.

SUMMARY OF TRADE-OFFS

C2 was considered to have lower overall impacts due primarily to lower impacts to fisheries and aquatic habitat, and vegetation.

THEREFORE, C2 IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED C (C1 VS C2)

C1 vs. C2

1.0 Transportation

1.1 Traffic Operations

C1 and C2 cross rolling terrain between the Zephyr Creek, Pepperlaw Brook and Uxbridge Brook valley systems. C1 crosses and parallels the Pepperlaw Brook valley, traversing more rolling terrain than C2. The profile for this alternative includes a long (> 1 km) stretch of highway at the maximum grade of 3%, which is sufficient to reduce operating speeds for trucks on the highway. C2 does not have such a long stretch of maximum grade, and therefore has a lower potential for slow moving vehicles.

C2 is approximately 10% longer than C1, and therefore has slightly higher energy usage to travel between the common points.

1.2 Network Compatibility

Effects on traffic volumes and operations on parallel/crossing roads cannot be appropriately analyzed for these minor route segments. The alternatives have similar construction staging and upgrading characteristics.

1.3 Cost

C2 crosses more sensitive wetland than C1. Costs associated with the structures required to cross this wetland, and the additional length of this route, increase construction, operating and maintenance costs of C2 to 13, 11 and 16% higher, respectively, than those of C1.

2.0 Natural Environment

Both route alternatives cross Pepperlaw Brook in its mid-upper reaches. Here, stream channels are smaller, with potentially greater effects from crossings. Alternative C1 crosses the brook downstream of habitat that has been designated by MNR as containing a vulnerable fish species although its presence has not been confirmed. This route also crosses known sculpin habitat, a species indicative of potential cold water habitat conditions. No other cold water species are reported for this area, although the warm water species bass and sunfish have been noted.

Alternative C1 crosses two (2) non-permanently flowing watercourses whereas C2 crosses only one (1). Both route alternatives encroach on only one (1) non-permanently flowing watercourse.

C1 produces higher impacts to fish and aquatic habitat on the basis of the potential presence of coldwater habitat and the potential presence of a species at risk, compared to route C2.

Both alternatives C1 and C2 cross one (1) local wildlife corridor located on the edge of the Oak Ridges Moraine and a regional corridor along the Pepperlaw Brook Valley. A number of indicator bird species are present on both routes that are representative of interior forest habitats and quality swamp habitats. The overall diversity of breeding birds is similar for both routes and high relative to other locations in the study area, as evidenced by the Simpson's Diversity Index results reported in the Natural Environment Technical Report (GLL 1997).

Three (3) rare species are encountered on C1 which are associated with high quality forest habitats along the route. No rare species are encountered on C2.

Route C1 crosses the Pepperlaw-Udora provincially significant wetland complex, impacting on approximately 3.3 ha. of swamp wetland area. Route C2 crosses the Pepperlaw-Udora Complex as well as the Zephyr-Egypt Wetland Complex, also provincially significant. Approximately 10.5 ha. of wetland

habitat, both swamp and marsh is lost on C2 with additional impacts through some larger wetland encroachments expected. Most importantly, the route alignment isolates a smaller parcel of wetland from the complex to the west, increasing impacts due to fragmentation.

Route C1 results in the loss of approximately 12.4 ha. of forest vegetation, most of which impacts on one large forest block and serves to fragment smaller parcels from the larger forest block as well as the adjacent wetland valley system. Of the wetland and forest cover loss, approximately 1.8 ha. has been classified as a Life Science ANSI by the Ministry of Natural Resources and 7.6 ha. as an Environmentally Significant Area by the Conservation Authority. This forest cover is considered to be high quality and its loss has the potential to alter the habitat of rare species. Route C2 loses a similar amount of habitat (13.8 ha.) as C1, and although this vegetation does not appear to provide habitat for rare species, it is considered to contain a greater diversity of habitats including upland forest, and silver or cedar-hemlock swamp. Both C1 and C2 cross riparian forest habitats.

Both routes produce high impacts to wildlife, but C1 produces slightly higher impacts due to its potential to displace rare species. Although C2 displaces more wetland area, road crossings already occur in the area, resulting in an existing level of impact. The C1 route isolates a small wetland connected to a larger unit which has greater impacts as the result of fragmentation to habitats and linkages. The C1 crossing also includes an ANSI and an ESA, and has greater potential to remove rare species. Although both routes produce generally high impacts, C1 is therefore considered to produce somewhat higher impacts.

No Earth Science ANSIs or permitted water taking were encountered in either alignment C1 or C2.

Both Routes C1 and C2 impact on an equivalent amount of permeable soils (47 ha. vs. 45 ha., respectively). Route C1 encounters approximately 3.3 ha. of shallow ground water table while C2 crosses approximately 10.5 ha. of shallow ground water. C1 is considered to produce a low impact to ground water while C2 is considered to produce a moderate impact, primarily related to the larger area of shallow ground water table encountered.

3.0 Social Environment

3.1 Community Effects

Both alternatives have similar direct property impacts. They both displace 7 residences, and C1 disrupts 14 properties while C2 disrupts 19.

The two route alternatives traverse a large stable agricultural area. Thus, they both carry high impacts to community stability and moderate impacts to community character (no unique community features displaced). C2 passes immediately south of Udora, separating farmsteads south of Udora from the community of Udora. (Grade separations are provided at Uxbridge Concession Roads 5 and 6, however, the perception of being separated from the community is recognized.) C1 does not have this effect on Udora, and therefore has a lower impact to community cohesion.

Both routes have no disruptions to community mobility, since no residences are affected by proposed road closings.

3.2 Aesthetics

Both alternatives impact a similar number of farmsteads, with C2 impacting 14 farmsteads and C1 impacting 10 farmsteads.

3.3 Noise

Both alternatives impact 14 residences, with C1 having slightly higher impacts. C1 has significant (>15 dBA increase) impacts to 3 residences, and C2 having significant impacts to 2 residences.

4.0 Economic Environment

4.1 Agriculture

Both Routes C1 and C2 exhibit moderate agricultural impacts. Route C2 has slightly greater impacts since it isolates more field crops and pasture/grazing land from the farm complexes. Therefore, Route C1 is the preferred alternative with respect to agricultural effects. Neither Route C1 nor Route C2 displace any high value farms. Route C1 displaces one medium value farm. The impacts from the orientation of the severances are equal. Although Route C1 has predominantly diagonal severances, it tends to follow the existing bush line at the back of the farms in Concession 6, thereby creating only minor isolation of the working fields from farm complexes. Although Route C2 follows mostly mid-concession property boundaries, it tends to isolate more working fields than does Route C1.

Generally, the impacts on soil capability are equal for these route alternatives, as they displace approximately equal amounts of field crops and pasture land. However, both alternatives create moderate impacts compared to other route alternatives due to the relatively large areas of displacement. For example, Route C2 displaces 69.6 ha. of field crops, 11 ha. of organic soils, and 111 ha. of Class 1-2 soils. The effects of the routes on linked operations is more limited. Route C2 only creates a minor impact in the viability of one farming operation.

Route C1 creates minor impacts to the operational viability of three linked operations.

4.2 Commercial/Industrial

No businesses are impacted by either alternative.

5.0 Cultural Environment

5.1 Archaeology

C1 has a high potential for impacting archaeological remains. Most of the C1 route follows the ancient Lake Algonquin beach ridge and, therefore, has a very high potential for impacting Paleo-Indian sites. C1 also has far more land within 200 m of water than C2. C2 has a moderate potential for impacting archaeological remains.

Neither C1 nor C2 have a direct impact on a known archaeological site but both C1 and C2 are very close to a reported but unverified Iroquoian village site location.

5.2 Historical

C1 displaces 6 farm complexes and disrupts 6 farm complexes and 2 roadscares. C2 displaces 5 farm complexes and 1 roadscape and disrupts 8 farm complexes and 2 roadscares.











C2 is considered to have the least adverse impact. Both routes have the same number of cultural landscape units displaced although C1 displaces 6 "very important" units (farm complexes) as opposed to 5 for C2. C2 disrupts a higher number but similar types of cultural landscape units than C1.

Both alternatives are of moderate impact as they involve displacement and disruption effects.

Trade-offs - C1 vs. C2

The two alternatives produce similar impacts, and neither alternative is clearly dominant. However, C1 generates high impacts to fisheries, vegetation and archaeology. The only criterion where C2 generates a high impact is wildlife, where C1 and C2 both generate high impacts, with C1 having slightly higher impacts. The remainder of the differences in impacts are in the low to moderate range.

C2 is therefore preferred, since it results in lower overall impacts than C1.

FACTOR/Criteria	D2A/E1	D2D/E1	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 			D2D/E1 serves more vehicles than D2A/E1 due to the additional interchange with Highway 48 near Pepperlaw. D2D/E1 has a moderate benefit to traffic operations and D2A/E1 has a low benefit.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 			D2D serves the future growth areas around Pepperlaw, which provides minor relief to the Highway 48 corridor west of Pepperlaw. D2A provides no such benefit to the road network. Although this benefit is realized outside the area directly served by the two routes, it represents a notable difference between these two routes. D2D has a slightly higher benefit to volumes on parallel/crossing roads. Similarly, for traffic operations, both route alternatives generate a moderate benefit to the road network by reducing the volumes, thereby improving operations on crossing/parallel routes. D2D improves operations in the Highway 48 corridor west of Pepperlaw by diverting some traffic away from this corridor. D2D has a slightly higher benefit to operations of parallel/crossing roads. Both routes have a moderate benefit to network compatibility, with D2D/E1 having slightly higher benefits.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 	SAME	SAME	No significant differences in costs. Both routes have a low cost impact.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	SAME	SAME	Both routes cross potential critical habitat (brook trout spawning) and impact known critical habitat (walleye spawning). Route D2D/E1 also impacts streams with sensitive (sculpin) and significant (bass) communities. Both routes have severe impacts to fisheries.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 			D2A/E1 crosses regional wildlife corridors, has a greater bird species diversity as well as potential to displace a regionally rare bird. D2A /E1 produces high impacts while D2D/E1 produces moderate impacts.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 	SAME	SAME	Impacts are very similar on both routes. Although D2D/E1 affects slightly more wetlands, the vegetation being removed in the D2A/E1 route is more sensitive. Both routes produce moderate impacts to wetlands.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			Both routes have similar effects, however D2D/E1 crosses more small forests and removes a larger area of Regional Forest. Both routes produce moderate impacts to vegetation, with D2D/E1 producing slightly higher impacts.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			Both routes cross relatively large areas of highly permeable soil and high ground water table. D2A/E1 has slightly lower impacts to groundwater. Both routes have high impacts to groundwater, with D2D/E1 producing slightly higher impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Impact. No Impact.















First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D/E CONNECTION WITH C

FACTOR/Criteria	D2A/E1	D2D/E1	COMMENT
3 SOCIAL ENVIRONMENT			
3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			D2A/E1 results in higher impacts than D2D/E1, particularly community cohesion and community character impacts. Both alternatives produce a high impact to community mobility. D2A/E1 has high community effects and D2D/E1 has moderate community effects.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 	SAME	SAME	Both alternatives produce similar impacts. Both alternatives have moderate aesthetic impacts.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 			Both alternatives result in similar impacts, but D2D/E1 results in slightly higher impacts. Both routes generate moderate noise impacts, with D2D/E1 having slightly higher impacts.
4 ECONOMIC ENVIRONMENT			
4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			D2A/E1 produces slightly higher farm operation impacts than D2D/E1. Both routes produce comparable impacts to soil capability and linked farming operations. Both routes produce high impacts to agriculture, but D2D/E1 produces slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 			D2D/E1 results in the displacement of two businesses. D2D/E1 results in low impacts while the D2A/E1 results in no impacts.
5 CULTURAL ENVIRONMENT			
5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			D2A/E1 impacts three Paleo-Indian sites. In addition, D2A/E1 has more land within 200m of water and within 500m of beach ridges than D2D/E1. D2D/E1 produces a low impact while D2A/E1 produces a high impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			D2D/E1 has lower displacement and disruption impacts than D2A/E1. Both routes produce a moderate impact to heritage features, but D2D/E1 has slightly lower impacts.

SUMMARY OF TRADE-OFFS

Both alternatives generate similar impacts and transportation benefits. D2D/E1 produces higher transportation benefits, lower community and cultural environment impacts and slightly lower economic impacts than D2A/E1. These advantages outweigh the slightly higher impacts to the natural environment associated with this alternative.

THEREFORE, D2D/E1 IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D/E CONNECTION WITH C

D2A\E1 vs. D\E1

1.0 Transportation

1.1 Traffic Operations

D2D/E1 includes an interchange at Highway 48 near Pepperlaw. This interchange serves a portion of the commuter traffic generated by Pepperlaw/Port Bolster. With alternative D2A/E1, the traffic served by the interchange provided with D2D/E1 would use Highway 48 via Sutton to access Highway 404. Thus, the peak hour volumes served are higher with D2D/E1 (3700 vehicles) than with D2A/E1 (3300 vehicles).

1.2 Network Compatibility

Copy from bubbles

1.3 Cost

The costs of the two alternatives are similar (less than 10% difference).

2.0 Natural Environment

Both route alternatives D2A/E1 and D2D/E1 have the E1 segment in common. This segment crosses the Beaverton River, White's Creek (twice), the north branch of Alsop's Creek, and a tributary of the Talbot River. Alsop's Creek is encroached upon by this segment. D2A/E1 also crosses and encroaches on Vrooman Creek. D2D/E1 crosses one non-permanent flowing watercourse. Both alternatives cross Uxbridge Brook at the south end of the alignment.

The E1 route segment crosses upstream of significant warm water fish communities (bass) in the Beaverton River and White's Creek and 2-3 km upstream of known walleye spawning (critical) habitat in the Beaverton River, as well as a tributary to the Talbot River, where walleye spawning is known to occur downstream in the main channel. Although there is no known use of the Beaverton River crossing area by walleye, it has been assumed given the presence of migratory runs further downstream.

These two routes also have a common segment in the south end of the route alignment. Here the route crosses Uxbridge Brook which supports sensitive and significant fish communities including brook trout, sculpin, bass and sunfish. This section of the stream may also provide brook trout spawning habitat, but this is not confirmed.

Both route alternatives are considered to have high impacts to fish and aquatic habitat based on the number of water crossings and potentially significant fish habitats.

E1 is common to both of these route alternatives and is found to cross 2 locally significant wildlife corridors at White's and Alsop's Creeks, as well as a regional corridor along the Uxbridge Brook Valley. In addition, D2A crosses locally significant wildlife corridors associated with the Beaverton River and Wilfred Bog wetland.

Both alternatives cross high quality forest and large swamps as indicated by the presence of bird species common to these types of environments. The overall bird species diversity is higher on the D2A/E1 section, and includes the presence of a regionally rare bird species, the Canada Warbler.

Wetland alterations are similar for both route alternatives, with D2D/E1 being slightly greater (18 ha. versus 15 ha.) than D2A/E1, and having longer encroachments. Roughly the same amount of marsh is affected by both alignments which is considered to have a high interaction with shallow ground water.

D2A/E1 crosses the Brock 1 wetland complex and skirts the south edge of the 'south of Wilfred' and Brock 3 wetland complex. D2D/E1 crosses the provincially significant Gibson Hill Swamp and locally significant Port Bolster Swamp.

Large areas of forest are removed by both crossings, approximately 62 ha. for D2A/E1 and 75 ha. for D2D/E1. Both routes cross large patches that will potentially result in fragmentation of high quality interior forest. Both routes remove regional forest, approximately 3 ha. for D2A/E1 and about 6 ha. for D2D/E1. A number of rare plant species were encountered along both route alignments and both routes exhibited diverse vegetation communities, including types unusual in the study area. Both corridors cross forested riparian habitat adjacent to first and second order streams, which is functionally important in maintaining shade and organic contributions.

In general, D2D/E1 removes more wetland, forest cover and affects a greater area of the shallow water table. However, the crossings in Gibson Hill and Port Bolster are in areas already crossed by highway and hydro corridors, whereas the new effects to the wetlands on D2A/E1 are potentially more damaging despite the smaller area affected. The higher species diversity, additional wildlife corridor crossing and rare species recorded on D2A/E1 lead to the conclusion that this route produces slightly more significant impacts than D2D/E1.

Both route alternatives affect large areas of permeable soils, with D2A/E1 being slightly smaller (93 ha.) than D2D/E1 at 113 ha.. Similar areas of shallow water table are encountered (15 ha. and 18 ha.) consistent with the wetland areas reported above. Although both routes produce high impacts to ground water indicators, D2D/E1 produces a slightly higher impacts to ground water.

3.0 Social Environment

3.1 Community Effects

Both routes have similar property impacts: D2A/E1 displaces 10 residents, D2D/E1 displaces 11; D2A/E1 disrupts 67 properties, D2D/E1 disrupts 50.

Both alternatives have a high impact to community stability, since D2D/E1 and D2A/E1 both create new highway corridors through Brock Township, a large, stable rural area. The impact to community cohesion is less with D2D/E1, since this alternative closely parallels existing recognized community boundaries: Durham Road 23 is the boundary between York and Durham Regions, as well as between the Township of Brock and the Town of Georgina; the east-west portion of Highway 48 west of Highway 12 formerly served as the boundary between Brock and Thorah Townships, prior to the amalgamation of these two municipalities.

Similarly, D2D/E1 has slightly lower impacts to community character than D2A/E1, since a portion of D2D/E1 closely parallels an existing highway corridor (along Highway 48). D2A/E1 represents a completely new highway corridor within a large rural area of Brock.

D2A/E1 has slightly higher potential impacts to mobility and potential disruption to emergency services due to the greater out-of-way travel impacts resulting from this alternative. Fifty-nine to 71 residences are potentially impacted by D2A/E1 compared to 35 to 50 residences with D2D/E1.

3.2 Aesthetics

The alternatives generate similar impacts (approximately 57 homes affected).

3.3 Noise

Both alternatives have similar impacts (35 residences affected), with D2D/E1 having slightly higher impacts.

4.0 Economic Environment

4.1 Agriculture

Both routes produce high impacts to agriculture, but D2D/E1 produces slightly lower impacts with respect to farm operations, and is therefore the preferred alternative.

Route D2A/E1 displaces four high value, three medium value and seven low value farms, whereas Route D2D/E1 displaces three high value farms and seven low value farms. Route D2A/E1 also has slightly higher impacts with respect to the orientation of severances and the associated separation of working crops from farming complexes. Both routes have relatively high impacts, but Route D2D/E1 has slightly lower impacts on farm operation units of the two alternatives.

Both routes have high negative impacts with respect to soil capability. Similar amounts and types of field crops, pasture land, and classes of soil capability are displaced, including 186 to 193 ha. of continuous or mixed system crops. Both routes have similar but moderate negative impacts with respect to linked operations, isolating working fields from farming complexes for two or three farms for each alternative.

4.2 Commercial/Industrial

D2A/E1 does not displace or disrupt any businesses, and therefore has no impact. D2D/E1 displaces two businesses along Highway 48: Port Bolster Stone and Gravel, and Summer Breeze Trailer Park. The stone and gravel business is an outlet operation, where products are brought for retail sales, not a production site. The trailer park is primarily a seasonal operation with approximately 50 sites, with some trailers stored on site year-round.

5.0 Cultural Environment

5.1 Archaeology

D2A/E1 directly impacts three Paleo-Indian sites. It has more land within 500 m of an ancient beach ridge and far more land within 200 m of water than D/E1. D2A/E1 has a high potential for impacting archaeological remains.

D/E1 has no direct impacts on archaeological sites and has a low potential for impacting archaeological remains.

5.2 Historical

D2A/E1 displaces 15 farm complexes and 8 roadscares and disrupts 30 farm complexes, 6 roadscares, 1 cemetery and 1 historical settlement. D2D/E1 displaces 12 farm complexes and 6 roadscares and disrupts 24 farm complexes, 6 roadscares, 2 cemeteries and 2 historical settlements.

D2D/E1 is considered to have the least adverse impact having the lowest number of cultural landscape units displaced and the lowest number of cultural landscapes disrupted.

Both alternatives are of moderate impact as they involve displacement and disruption effects.

Trade-offs - D2A/E1 vs. D2D/E1

Both alternatives generate similar impacts and transportation benefits. D2D/E1 produces higher transportation benefits, lower community and cultural environment impacts and slightly lower economic impacts than D2A/E1. These advantages outweigh the slightly higher impacts to the natural environment associated with this alternative.

D2A/E1 crosses the Brock 1 wetland complex and skirts the south edge of the 'south of Wilfred' and Brock 3 wetland complex. D2D/E1 crosses the provincially significant Gibson Hill Swamp and locally significant Port Bolster Swamp.

Large areas of forest are removed by both crossings, approximately 62 ha. for D2A/E1 and 75 ha. for D2D/E1. Both routes cross large patches that will potentially result in fragmentation of high quality interior forest. Both routes remove regional forest, approximately 3 ha. for D2A/E1 and about 6 ha. for D2D/E1. A number of rare plant species were encountered along both route alignments and both routes exhibited diverse vegetation communities, including types unusual in the study area. Both corridors cross forested riparian habitat adjacent to first and second order streams, which is functionally important in maintaining shade and organic contributions.

In general, D2D/E1 removes more wetland, forest cover and affects a greater area of the shallow water table. However, the crossings in Gibson Hill and Port Bolster are in areas already crossed by highway and hydro corridors, whereas the new effects to the wetlands on D2A/E1 are potentially more damaging despite the smaller area affected. The higher species diversity, additional wildlife corridor crossing and rare species recorded on D2A/E1 lead to the conclusion that this route produces slightly more significant impacts than D2D/E1.

Both route alternatives affect large areas of permeable soils, with D2A/E1 being slightly smaller (93 ha.) than D2D/E1 at 113 ha.. Similar areas of shallow water table are encountered (15 ha. and 18 ha.) consistent with the wetland areas reported above. Although both routes produce high impacts to ground water indicators, D2D/E1 produces a slightly higher impacts to ground water.

3.0 Social Environment

3.1 Community Effects

Both routes have similar property impacts: D2A/E1 displaces 10 residents, D2D/E1 displaces 11; D2A/E1 disrupts 67 properties, D2D/E1 disrupts 50.

Both alternatives have a high impact to community stability, since D2D/E1 and D2A/E1 both create new highway corridors through Brock Township, a large, stable rural area. The impact to community cohesion is less with D2D/E1, since this alternative closely parallels existing recognized community boundaries: Durham Road 23 is the boundary between York and Durham Regions, as well as between the Township of Brock and the Town of Georgina; the east-west portion of Highway 48 west of Highway 12 formerly served as the boundary between Brock and Thorah Townships, prior to the amalgamation of these two municipalities.

Similarly, D2D/E1 has slightly lower impacts to community character than D2A/E1, since a portion of D2D/E1 closely parallels an existing highway corridor (along Highway 48). D2A/E1 represents a completely new highway corridor within a large rural area of Brock.

D2A/E1 has slightly higher potential impacts to mobility and potential disruption to emergency services due to the greater out-of-way travel impacts resulting from this alternative. Fifty-nine to 71 residences are potentially impacted by D2A/E1 compared to 35 to 50 residences with D2D/E1.

3.2 Aesthetics

The alternatives generate similar impacts (approximately 57 homes affected).

3.3 Noise

Both alternatives have similar impacts (35 residences affected), with D2D/E1 having slightly higher impacts.

4.0 Economic Environment

4.1 Agriculture

Both routes produce high impacts to agriculture, but D2D/E1 produces slightly lower impacts with respect to farm operations, and is therefore the preferred alternative.

Route D2A/E1 displaces four high value, three medium value and seven low value farms, whereas Route D2D/E1 displaces three high value farms and seven low value farms. Route D2A/E1 also has slightly higher impacts with respect to the orientation of severances and the associated separation of working crops from farming complexes. Both routes have relatively high impacts, but Route D2D/E1 has slightly lower impacts on farm operation units of the two alternatives.

Both routes have high negative impacts with respect to soil capability. Similar amounts and types of field crops, pasture land, and classes of soil capability are displaced, including 186 to 193 ha. of continuous or mixed system crops. Both routes have similar but moderate negative impacts with respect to linked operations, isolating working fields from farming complexes for two or three farms for each alternative.

4.2 Commercial/Industrial

D2A/E1 does not displace or disrupt any businesses, and therefore has no impact. D2D/E1 displaces two businesses along Highway 48: Port Bolster Stone and Gravel, and Summer Breeze Trailer Park. The stone and gravel business is an outlet operation, where products are brought for retail sales, not a production site. The trailer park is primarily a seasonal operation with approximately 50 sites, with some trailers stored on site year-round.

5.0 Cultural Environment

5.1 Archaeology

D2A/E1 directly impacts three Paleo-Indian sites. It has more land within 500 m of an ancient beach ridge and far more land within 200 m of water than D/E1. D2A/E1 has a high potential for impacting archaeological remains.

D/E1 has no direct impacts on archaeological sites and has a low potential for impacting archaeological remains.

5.2 Historical













D2A/E1 displaces 15 farm complexes and 8 roadscares and disrupts 30 farm complexes, 6 roadscares, 1 cemetery and 1 historical settlement. D2D/E1 displaces 12 farm complexes and 6 roadscares and disrupts 24 farm complexes, 6 roadscares, 2 cemeteries and 2 historical settlements.



D2D/E1 is considered to have the least adverse impact having the lowest number of cultural landscape units displaced and the lowest number of cultural landscapes disrupted.

Both alternatives are of moderate impact as they involve displacement and disruption effects.

Trade-offs - D2A/E1 vs. D2D/E1











Both alternatives generate similar impacts and transportation benefits. D2D/E1 produces higher transportation benefits, lower community and cultural environment impacts and slightly lower economic impacts than D2A/E1. These advantages outweigh the slightly higher impacts to the natural environment associated with this alternative.

FACTOR/Criteria	B1A	B1B	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	The routes provide similar benefits to traffic operations. Both routes provide a moderate benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes. Both routes provide a moderate benefit to network compatibility.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			B1B has higher costs than B1A because B1B requires additional structures over wetlands. B1A has a low cost impact and B1B has a moderate cost impact.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 			B1B passes through potential critical habitat (pike spawning). B1B also has more encroachments that affect considerable lengths of flowing streams. B1B produces moderate impacts on fisheries and aquatic habitat while B1A produces low impacts
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have wildlife species and habitat. 			B1A crosses 2 local corridors, 2 types of large habitat (forest and swamp) and comes within 1 km of a Great Blue Heronry. B1B displaces a rare species that tolerates edge habitats. B1A produces moderate impacts on wildlife. B1B produces low impacts on wildlife.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 			Larger wetland encroachments and loss occur on B1B but they are in less sensitive habitats than B1A. Both alternatives produce low impacts, although the impact is marginally larger on B1A.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			B1A crosses larger forested areas including old growth forest and higher quality beech-maple forest that is rare in the landscape. B1A produces high impact to the vegetation while B1B produces low impact.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			B1B crosses larger areas of highly permeable soil and areas sensitive to the potential release of contaminants. B1A also crosses slightly larger area of high ground water table. Both routes produce a moderate impact although B1A is slightly better as it crosses less sensitive areas.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	SAME	SAME	No Earth Science ANSI's in vicinity of alignment Neither alternative produces an impact.

 First Preference
  Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B1 (B1A vs. B1B)

FACTOR/Criteria	B1A	B1B	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			B1B displaces and disrupts slightly more residences than B1A but B1A has a higher impact on community stability. The higher effects on community stability outweigh the slightly higher residential impacts. Therefore, B1B is preferred. Both alternatives produce a low impact on community effects, but B1B produces slightly lower impacts.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 			B1A visually impacts more residents. Both alternatives produce a moderate impact to aesthetics, but B1B produces slightly lower impacts.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 	SAME	SAME	The routes generate similar noise impacts. Both routes have moderate noise impacts.
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			B1A produces slightly higher farm operation impacts and soil capability impacts than B1B. Both routes produce comparable minor impacts to linked farming operations. Both routes produce moderate impacts to agriculture, but route B1B produces slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	SAME	SAME	Both alternatives affect the same business which results in a minor impact. Both alternatives result in low impacts.
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			B1A impacts far less land within 200m of water or within 500m of a beach ridge than B1B. Neither route directly impacts a registered site. B1A produces a low impact. B1B produces a moderate impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			Route B1A has lower displacement impacts and similar disruption impacts than B1B. Both routes produce a moderate impact to heritage features, but B1A has slightly lower impacts.

SUMMARY OF TRADE-OFFS

The routes have similar impacts and transportation benefits. B1B has lower or slightly lower impacts to the community, wetlands, vegetation and agriculture. These criteria are of greater importance to the study area than fisheries, groundwater cost and the cultural environment criteria, for which B1A has lower or slightly lower impacts.

THEREFORE, B1B IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B1 (B1A vs. B1B)

B1B vs. B1A

1.0 Transportation

1.1 Traffic Operations

Both routes increase the capacity of the road network and therefore provide a moderate benefit to traffic operations. Assessment of other benefits to traffic operations is not appropriate for these minor route segments.

1.2 Network Compatibility

Both routes increase the capacity of the road network and therefore provide a moderate benefit to the local road network. Assessment of other benefits to the road network is not appropriate for these minor route segments.

1.3 Cost

Construction and maintenance costs with B1B are 33% and 36% higher, respectively, than B1A. The additional costs on B1B are primarily due to the structures required at the additional wetland crossings.

2.0 Natural Environment

Both routes B1A and B1B cross five (5) watercourses, of which three (3) and four (4) have non-permanent flow, respectively. Alternative B1B may impact on potential pike spawning habitat in the upper part of the Maskinonge River upstream of the crossing but this potential has not been confirmed. B1B also results in a greater area of encroachment than B1A, affecting approximately 3,400 m of stream for the former, versus 1,500 m at the latter route segment.

B1B is considered to produce moderate impacts to fish and aquatic habitat, while B1A produces low impacts.

Route alternative B1A crosses two local wildlife corridors, one associated with the Maskinonge River and Wetland and the other along a headwater marsh connected to the Black River Wetland Complex. Alternative B1B also crosses that Maskinonge local corridor.

Both B1A and B1B encounter bird species that are indicative of interior forest and large marsh habitats. Only B1B encountered 2 rare bird species.

Both route alternatives result in a similar loss of wetland area (approximately 4.5 ha.). B1A crosses the Black River wetland complex impacting on both swamp and marsh habitats. Alternative B1B impacts on the Maskinonge wetland crossing more marsh units than B1A as well as swamp units. This alternative has a higher degree of interaction with the shallow ground water and results in larger and more frequent encroachments than B1A.

Alternative B1A crosses approximately 20 ha. of forest, which includes an old growth forest unit whereas B1B impacts on approximately 13 ha. of forest. Both alternatives cross a portion of the York Regional Forest as well as upland deciduous forest units. B1A impacts on silver maple swamp as well as thickets and meadow marsh whereas B1B crosses only thicket swamp and meadow marsh. B1A crosses riparian forest in the headwaters of the Black River while B1B crosses riparian forest of a third order stream, which is typically less dependent on the shading effect from the vegetation.

In summary, B1A crosses an extra corridor and passes within one kilometre of a Great Blue Heronry. Wetland and riparian forest losses are sustained in the headwaters of the Black River Wetland complex. B1A also crosses a larger area of upland forest which includes an old growth beech-maple forest and

silver maple swamp, seldom encountered in the study area. B1B may displace 2 rare species and more marsh units are crossed which exhibit a high degree of interaction with the shallow ground water system. The forest impacts are less severe on B1B and on this basis B1B is slightly preferred.

Route alternative B1A crosses a smaller area (12.3 ha.) of permeable soils than B1B which crosses approximately 48.2 ha. of these soils. Both route alignments cross about 4.5 ha. of shallow ground water associated with the wetland crossings. Route alternative B1A is slightly preferred over B1B as the result of the larger area of permeable soils crossed.

3.0 Social Environment

3.1 Community Effects

B1B has slightly higher property impacts than B1A. Twelve residences are displaced with B1B, while B1A displaces 11 residences. B1B disrupts 24 properties, while B1A disrupts 19 properties.

B1B has less of an impact to community stability, since almost half of the length of this alternative passes in close proximity to Keswick, which is a growing (i.e. non-stable) urban area. Almost all of B1A crosses through a stable agricultural area, creating a high impact to community stability.

Both routes have similar impacts to community cohesion; neither alternative severs the community links around Keswick, and both alternatives maintain existing connections to rural areas around Keswick.

Neither alternative displaces any unique community features, but each alternative represents a new transportation corridor in this rural area. Both alternatives have a moderate impact to community character.

3.2 Aesthetics

The alternatives impact a similar number of residences; B1A impacts 17 residences, and B1B impacts 12 residences.

3.3 Noise

The alternatives generate similar potential noise impacts: B1A affects 12 residences, including 5 residences with moderate impacts, 4 with high impacts and 3 with significant impacts; B1B affects 15 residences, including 9 residences with moderate impacts, 5 with high impacts and 1 with significant impacts.

4.0 Economic Environment

4.1 Agriculture

The preferred route alternative is Route B1B since Route B1A has a greater impact on soil capability. The overall impact of these routes is considered moderate in comparison to other routes with respect to agricultural effects.

Route B1B displaces a high-value farm while Route B1A does not. No medium value farms are displaced by either route, and approximately the same number of low value farms are displaced. However, Route B1B is the preferred alternative with respect to farming operations, since B1A diagonally bisects more agricultural properties, thereby disrupting and isolating more working fields.

The displacement of specialty crops, field crops and pasture/grazing land is approximately equal for both routes. However, Route B1A displaces a greater amount of Class 1 and 2 land, and Route B1B is the preferred route with respect to soil capability.

Both routes have similar minor impacts to one linked farming operation.

4.2 Commercial/Industrial

The alternatives generate similar business impacts: both displace a real estate office and disrupt a trucking company parking facility (minor property taking). Neither impact represents a significant impact to the operation of the businesses.

5.0 Cultural Environment

5.1 Archaeology

Neither B1B nor B1A have a direct impact on a known archaeological site. B1B has more land within 500 m of an ancient beach ridge and far more land within 200 m of water than B1A. B1B follows the edge of the beach ridge. B1B has a high potential for impacting archaeological remains. B1A has a moderate potential impact on archaeological remains.

Neither B1B nor B1A

5.2 Historical

B1A displaces 4 farm complexes and 4 roadscares and disrupts 14 farm complexes and 1 roadscape. B1B displaces 5 farm complexes and 4 roadscares and disrupts 13 farm complexes, 1 roadscape and 1 historical settlement.

B1A is considered to have the least adverse impact having one less "very important" cultural landscape unit displaced, and slightly less cultural landscape unit disruption effects than B1B.

All are of moderate impact as they involve displacement and disruption effects.

Trade-offs - B1B vs. B1A

The routes have similar impacts and transportation benefits. B1B was preferred over B1A because B1B has lower or slightly lower impacts to the community, wetlands, vegetation and agriculture. These criteria are of greater importance to the study area than fisheries, ground water, cost and the cultural environment criteria, for which B1A has lower or slightly lower impacts.

B3A vs. B3B

1.0 Transportation

1.1 Traffic Operations

Both alternatives increase the capacity of the road network and provide a benefit to traffic operations. B3B provides an interchange at Pollock Road, which serves central and northern Keswick, as well as an interchange at Woodbine Avenue. B3A only provides the interchange at Woodbine Avenue. The additional interchange at Pollock Avenue increases the peak hour volume served by B3B from the 5,700 vehicles served by B3A to 7,200 vehicles. The increase in traffic volume greatly improves traffic operations in this portion of the study area, and provides a significantly higher benefit than B3A.

1.2 Network Compatibility

B3B creates a greater benefit to traffic volumes and operations on Woodbine Avenue than B3A, while B3A provides a greater benefit to volumes and operations on Kennedy Road. Woodbine Avenue is a more significant facility in the road network, due to its importance as an arterial road for Keswick.

Staging abilities cannot be appropriately assessed for these minor route segments.

1.3 Cost

Construction, operation and maintenance costs of B3B are 16%, 3% and 19% higher, respectively, than those of B3A. The higher costs generally reflect a longer route length and additional crossing road structures associated with B3B.

2.0 Natural Environment

Both route segments B3A and B3B cross the Maskinonge River and may affect pike spawning habitat. Pike spawning is known to occur in the lower portion of the Maskinonge River but use of the upstream tributaries by pike has not been confirmed. B3B crosses the river at a lower point in the system and therefore may be more likely to impact on the potential pike use than B3A, further upstream. A first order tributary to the Black River arising in permeable soils is crossed by the common segment of both these route alternatives.

Alternative B3A also crosses five (5) non-permanently flowing watercourses and encroaches upon 2 others. Alternative B3B crosses three (3) non-permanently flowing watercourses and encroaches on two (2).

Both of these alternatives produce a similar and moderate impact to fisheries and aquatic habitat.

Two local wildlife corridors are crossed by B3A while B3B crosses only one. Both route segments pass within a kilometer of the Great Blue Heronry. As well, two (2) bird species indicative of high quality forest and swamp habitats are found along both routes.

Portions of the provincially significant Maskinonge Wetland and locally significant Sod Swamp are crossed by route segment B3A. These wetlands include both swamp and marsh. The regionally rare Sedge Wren breeds within the marsh area crossed by this route. Approximately 7 ha. of wetland is crossed by B3A, which also includes adjacent forest indicating a higher functioning system. B3B also crosses Sod Swamp but affects less than 5 ha. on the southern edge of the swamp and the adjacent lands are largely farmed, resulting a slightly lower impact from this route.

Segment B3A in general removes more habitat than B3B, however, the vegetation along B3B is more diverse and includes upland forest units and silver maple units that were rarely encountered in the study area.

B3A crosses more forested habitat (19 ha.) which includes one large block and one smaller forest segment as compared to B3B which affects 13 ha. of forested lands. The forest cover crossed by B3B is comprised of riparian forest crossing more diverse vegetation types than that encountered in B3A.

The impacts produced by both routes on vegetation, wetlands and wildlife are similar and tend to be low, however, due to the greater loss of wetland and forest, the presence of a rare species and marsh on B3A, B3B is considered to produce slightly lower impacts.

Neither of the two routes segments crosses any geologically significant areas or permitted water taking, resulting in no effect for these two criteria.

Both route segments B3A and B3B cross large areas of highly permeable soils, 86 ha. versus 82 ha., respectively. B3A affects approximately 7 ha. of lands with high water table associated with Sod Swamp and the Maskinonge Wetland while B3B affects approximately 5 ha. of high water conditions. While both route segments produce similar impacts to the ground water, B3B is slightly preferred over B3A on the basis of the smaller effect to high water table.

3.0 Social Environment

3.1 Community Effects

B3A displaces 13 residences, while B3B displaces 11 residences. B3A disrupts 30 properties, while B3B disrupts 36 properties. One of the properties disrupted by B3B is a plan approved residential subdivision (Pollock Estates), which has not initiated construction.

The alternatives have similar impacts to community cohesion and character. They both pass through the rural community east of Keswick, and neither displaces any unique community features or severs strongly defined community links. B3A, however, has a greater impact to community stability, since it passes entirely through a large, stable rural area. The north-south portion of B3B passes in close proximity to Keswick, a non-stable growth area in transition. B3B has a lower impact to community stability.

For the evaluation of the route segments, provision of grade separations at crossing roads was assumed for both alternatives. Neither alternative therefore created any impacts to community mobility or potential disruption to emergency services.















3.2 Aesthetics

B3A has higher aesthetic impacts, with 13 residences affected, than B3B, which has 4 residences affected.

3.3 Noise

B3A has higher potential noise impacts, with 22 residences affected, than B3B, which has 8 residences affected. Noise impacts with B3A include 6 residences with moderate impacts and 7 residences with high impacts. Impacts with B3B include 5 residences with moderate impacts and 2 residences with high noise impacts.

4.0 Economic Environment

FACTOR/Criteria	B3A	B3B	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 			Route B3B serves a significantly higher design hour volume than B3A. B3B has high traffic operations benefits and B3A has low benefits.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 			B3B creates a greater benefit to traffic volumes and operations on Woodbine Avenue, while route B3A creates a greater benefit to traffic volumes on Kennedy Road, which is not as significant to the roadway network. Staging abilities cannot be appropriately assessed for these minor route segments. B3B produces high benefits to Network Compatibility and B3A produces moderate benefits to Network Compatibility.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			B3B has slightly higher costs than B3A due to greater route length and additional structures required. Both routes have low cost impacts, with B3A having slightly lower impacts.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	SAME	SAME	Critical habitat (pike spawning) downstream of a crossing may be affected by B3B and possibly B3A. Both routes also cross one permanently flowing stream. Both routes have a moderate impact on fisheries and aquatic habitat.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 			B3A crosses more local wildlife corridors than B3B. Both routes have a similar low potential to affect foraging of Great Blue Herons from local heronry. B3A and B3B both produce a low impact to wildlife, however, the wildlife corridors crossed by B3A produces a greater impact.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 			B3A has more short wetland crossings, one of which passes through standing water and forest, and displaces more area than B3B. Wetlands crossed by B3A have slightly higher ground water interaction than that crossed by B3B. B3B produces a low impact to wetlands. B3A produces a moderate impact to wetlands.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			B3A has a greater number of forest crossings and displaces a slightly larger area of forest than B3B. In addition B3A crosses forested riparian habitat associated with a 1st/2nd order stream. Both alternative produce a low impact to vegetation but B3B produces slightly lower impacts.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			Both alternatives cross large areas of highly permeable soils, areas of high ground water table and areas sensitive to ground water contamination. Both alternative produce a moderate impacts to groundwater but B3B produces slightly lower impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	Neither alternative produces an impact. Neither alternative produces an impact.



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B3 (B3A vs. B3B)

FACTOR/Criteria	B3A	B3B	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 	<input type="radio"/>	<input checked="" type="radio"/>	B3A displaces more residences and has a higher potential effect on community stability. B3B disrupts more residences. B3B produces moderate impacts on community effects. B3A produces high impacts on community effects.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 	<input type="radio"/>	<input checked="" type="radio"/>	B3A visually impacts more residences. B3B produces low impacts on aesthetics. B3A produces moderate impacts on aesthetics.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 	<input type="radio"/>	<input checked="" type="radio"/>	B3A impacts more than twice as many residences than B3B and most of these impacts are more severe than the impacts associated with B3B. B3A produces a moderate impact while B3B produces a low impact.
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 	<input type="radio"/>	<input checked="" type="radio"/>	B3A produces a slightly greater impact to the viability of existing farm operations. B3B has a slightly greater impact on soil capability. Both alternatives produce a moderate impact to agriculture but B3B produces slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	No Impact	No Impact	Neither alternative produces an impact. Neither alternative produces an impact.
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 	<input checked="" type="radio"/>	<input type="radio"/>	B3B impacts a Paleo-Indian site and impact more land within 200 m of water than B3A. B3A produces a low impact. B3B produces a moderate impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 	<input checked="" type="radio"/>	<input type="radio"/>	B3A displaces fewer cultural landscape units than B3B. Both alternative produce a moderate impact to historical features but B3A produces slightly lower impacts.

SUMMARY OF TRADE-OFFS

B3B is preferred in all criteria except for archaeological and historical. Although B3A produces slightly lower historical impacts, these are outweighed by the greater benefits to transportation and lower impacts to all other criteria provided by B3B.

THEREFORE, B3B IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED B3 (B3A vs. B3B)

4.1 Agriculture

Both routes have a moderate impact on the agricultural resources. The impacts are relatively equal for the two alternatives and neither route is therefore preferred over the other. Neither route displace any high value farms. Route B3B displaces two medium value farms, but Route B3A creates a greater number of diagonal and horizontal severances which tend to isolate significantly more working fields from farm complexes than does Route B3B. Route B3B follows mostly mid-concession property boundaries, thereby reducing severance impacts.

Both routes displace approximately equal amounts of field crops and pasture/grazing lands. Route B3B displaces a minor area of specialty crop land but Route B3B displaces several times that amount of organic soils with the potential for specialty crops. Generally, the impacts are equal for both route alternatives.

Neither route alternative results in any known linked operation limitations.

4.2 Commercial/Industrial

Neither alternative has any impacts to businesses.

5.0 Cultural Environment

5.1 Archaeology

B3B directly impacts a known Paleo-Indian site. B3B also has far more land within 200 m of water than B3A. B3B has a high potential impact on archaeological remains. B3A has a moderate potential impact on archaeological remains.

5.2 Historical
















B3A displaces 3 farm complexes and 1 roadscape and disrupts 11 farm complexes. B3B displaces 5 farm complexes and 1 roadscape and disrupts 11 farm complexes.


B3A is considered to have the least adverse impact having fewer "very important" cultural landscape units displaced than B3B. An equal number and type of cultural landscape units are disrupted by both alternatives.

Both alternatives produce a moderate impact as they involve displacement and disruption effects.

Trade-offs - B3A vs. B3B
















B3B produces higher transportation benefits and the same, lower or slightly lower impacts for all criteria except cost (B3A slightly lower), wildlife and the cultural environment criteria (B3A slightly lower for historical). With wildlife and archaeology, B3B produces moderate impacts, while B3A produces low impacts. B3B is therefore preferred over B3A.




FACTOR/Criteria	D1\E1	D2A\E1	D2B\E1	COMMENT
1. TRANSPORTATION				
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	SAME	All the routes provide the same benefit to traffic operations. The routes provide the same moderate benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	SAME	D1/E1 has a better staging ability because it can provide an additional interim terminus at a provincial highway (Highway 7). Overall, the routes have the same benefits to network compatibility. All routes provide a moderate benefit to traffic operations.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 	SAME	SAME	SAME	D1/E1 has a slightly higher operating cost because it is longer than the other two alternatives. Overall, the routes have the same cost impacts. All routes have a low cost impact.
2. NATURAL ENVIRONMENT				
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 				D2A/E1 and D2B/E1 have similar impacts to cold water habitat and potential critical habitat (brook trout spawning). D2B/E1 has slightly greater impacts to sensitive (sculpin) and significant (bass) communities since it is a crossing while D2A/E1 is a distant crossing. D1/E1 does not have an impact. All three routes have a similar impact to critical habitat in the Beaverton River (walleye spawning). Route D2A/E1 and D2B/E1 produce high impacts to fisheries with D2B/E1 being slightly worse, while D1/E1 produces moderate impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have wildlife species and habitat. 				D1/E1 severs wildlife corridors and passes within 1 km of heronry. Impacts on D2A/E1 and D2B/E1 are similar, but D2B/E1 removes a greater area of habitat D1/E1 produces high impacts to wildlife while D2A/E1 and D2B/E1 produces similar moderate impacts with the latter slightly higher
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 				D1/E1 has highest loss of wetland, and produces high impact to wetland function. D2B/E1 crosses less wetland, but produces the longest area of wetland encroachments, including on the fen in Gibson Hill Swamp. This will result in an increased need for careful study of the hydrogeology to ensure the ground water supply to the fen, and greater diligence in terms of mitigation in order to avoid impacts to this unique wetland. D2A/E1 crosses less wetland, with the least encroachment. D1/E1 produces the highest impact to wetlands, and D2B/E1, although of lesser impact is scored high due to its proximity to the fen. D2A/E1 produces a moderate impact.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 				D1/E1 removes large areas of forest, which includes areas of ESA and regional forest, many forests of large sizes, combined with a large number of habitat types. D2B/E1 produces slightly reduced high impacts, missing the ESA. D2A/E1 produces moderate impacts affecting less forest in general, and no loss of regional forest. D1/E1 produces the highest impacts with D2B/E1 high but slightly less. D2A/E1 produces low impacts.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 				All three routes cross relatively large areas of highly permeable soil, areas sensitive to ground water contamination and high ground water table. D1/E1 crosses smallest sensitive areas but largest shallow ground water area and is the best overall route. D2B/E1 crosses the largest sensitive areas and has the highest impact of the three. All three routes produce moderate impacts, with D1/E1 producing the lowest impacts and D2B/E1 the highest impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Impact	All three routes have no Earth Science ANSTs within 300 m of the route. No Impact.

 First Preference
  Second Preference
  Third Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D/E1 (D1/E1 vs. D2A/E1 vs. D2B/E1)

FACTOR/Criteria	D1\E1	D2A\E1	D2B\E1	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 	SAME	SAME	SAME	All alternatives produce similar physical impacts and community effects. All alternatives produce similar moderate impacts.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 				All alternatives visually affect a similar number of residences. All alternatives produce moderate impacts, but D2B\E1 produces slightly higher impacts.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 				D2A/E1 results in fewer impacts than the other alternatives. D1/E1 and D2B/E1 result in similar impacts. D2A/E1 results in low noise impacts while D1/E1 and D2B/E1 results in similar moderate impacts.
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 				D1/E1 has the highest impact with severe impacts to operational viability and soil capability. Route D2B/E1 and D2A/E1 produce approximately the same impact. All alternatives result in high impacts, with D1/E1 having the highest impacts and D2B/E1 producing slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	No Impact	No Impact	No Impact	No Impact. No Impact
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 				D2A/E1 will directly impact three Paleo-Indian sites and D2B/E1 will impact four Paleo-Indian sites. D2B/E1 follows the beach ridge lines most closely. D2A/E1 has slightly less impact on lands within 200m of water. D1/E1 produces a low impact. D2A/E1 produces a moderate impact. D2B/E1 produces a high impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 				D2B/E1 has the least potential adverse impact with the lowest displacement effects and lowest disruption effects. D1/E1 is considered to have the greatest impacts. All alternatives produce moderate impacts. D2B/E1 is slightly preferred.
SUMMARY OF TRADE-OFFS All alternatives result in similar social, economic and cultural impacts and similar transportation benefits. D2A/E1 produces much lower natural environment impacts than all other alternatives. THEREFORE, D2A/E1 IS PREFERRED				

 First Preference
  Second Preference
  Third Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D/E1 (D1/E1 vs. D2A/E1 vs. D2B/E1)

D1\E1 vs. D2A\E1 vs. D2B\E1

1.0 Transportation

1.1 Traffic Operations

The alternatives increase the capacity of the road network, providing a benefit to traffic operations. There are no significant differences among the alternatives. The connection to Highway 7 with Alternative D1/E1 does not significantly improve operations on the road network.

1.2 Network Compatibility

The alternatives provide the same benefits to traffic operations and volumes on the local road network. Alternative D1/E1 has a slightly better staging ability than the other alternatives, since it can provide an additional interim terminus at a provincial highway (Highway 7).

1.3 Cost

The alternatives all share similar cost impacts. Construction, maintenance and operation costs for the three alternatives are within 11% of the cost of the lowest alternative. D1/E1 has a slightly higher operating cost (11% higher than D2A/E1; D2B/E1 is 7% higher than D2A/E1) due to the additional length of this alternative.

2.0 Natural Environment

All route alternatives D1/E1, D2A/E1 and D2B/E1 have the E1 segment in common. This segment crosses five permanent watercourses including the Beaverton River, White's Creek (twice), the north branch of Alsop's Creek, and a tributary of the Talbot River. Alsop's Creek is encroached upon by this alignment. Both D2A/E1 and D2B/E1 cross and encroach once each on Vrooman Creek. These two routes also have a common segment in the south end of the route alignment that crosses Uxbridge Brook.

The E1 route segment crosses upstream of significant warm water fish communities (bass) in the Beaverton River and White's Creek and 2-3 km upstream of known walleye spawning (critical) habitat in the Beaverton River, as well as a tributary to the Talbot River, where walleye spawning is known to occur downstream in the main channel. Although there is no known use of the Beaverton River crossing area by walleye, it has been assumed given the presence of migratory runs further downstream.

Where the route alignments D2A/E1 and D2B/E1 cross Uxbridge Brook, it supports sensitive and significant fish communities including brook trout, sculpin, bass and sunfish. This section of the stream may also provide brook trout spawning habitat, but this is not confirmed.

D1/E1 crosses five (5) permanent watercourses including Uxbridge Brook and one of its headwater tributaries, as well as Vrooman Creek and two of its headwater tributaries, in addition to those described for the common E1 segment. The crossing of Uxbridge Brook is approximately 4 km upstream of unconfirmed brook trout spawning habitat. Spawning may also occur upstream of the crossing in an area of ground water upwelling. Significant warm water fish communities (bass sunfish and perch) are present at the crossing locations at both Vrooman Creek and Uxbridge Brook.

Routes D2A/E1 and D2B/E1 produce high impacts to fish and fish habitat with D2B/E1 being slightly worse than D2A based on the presence of numerous stream crossings with reported presence of significant or sensitive species and critical habitat uses. D1/E1 is expected to produce moderate impacts.

All of the route alternatives cross a regional wildlife corridor along Uxbridge Brook, and local corridors along White's and Alsop's Creeks and running west from the Beaverton River valley. D2A/E1 and D2B/E1 also cross a local wildlife corridor that branches south from the Beaverton River corridor through Wilfred Bog. D1/E1 twice crosses a local corridor along Vrooman Creek.

The D1/E1 route has the second highest number of bird species encountered in the entire study area, as reported in the Natural Environment Technical Report (GLL 1997), and includes the regionally rare Magnolia Warbler. This route also has the highest diversity in the study area, as evidenced by the Simpson's Diversity Index as reported in the Natural Environment Technical Report (GLL 1997). Four species of salamander are encountered along this route which are indicative of high quality wetland and upland habitats, uncommonly found within the study area. D1/E1 also passes within 1 kilometer of a Great Blue Heronry.

Route D2A/E1 contains high numbers of bird species but the diversity index value was similar to that reported for D2B/E1. One regionally rare bird species is encountered here and on D2B/E1. D2B/E1 exhibits the third highest number of bird species in the study area, although the diversity index is slightly lower than that of the whole study area. All routes have many bird species, indicative of good quality forest habitat and large swamp areas.

D1/E1 therefore produces the highest impacts to wildlife.

Route D1/E1 results in the most wetland lost (approximately 23.5 ha. of swamp with some marsh) compared with 14.7 ha. in D2A/E1, of which a greater proportion is marsh, and 17.2 ha. for D2B/E1. The adjacent lands in all cases are mostly farm land but with a good percentage of forest cover interspersed.

D2B/E1 exhibits the least interaction with the shallow ground water and results in the greatest encroachment on wetlands. D1/E1 is similar in its level of encroachment to D2B/E1 whereas D2A/E1 has the least encroachment. D1/E1 encroaches upon Derryville Swamp East, a bog which is a rare wetland type in the study area. The bog is maintained by precipitation, not ground water, so there are nutrient and contamination concerns. Further, the encroachment increases the loss of connectivity between Derryville Swamp East and Derryville Swamp West. Both swamps are considered environmentally significant areas and the East portion is considered an ANSI. D1/E1 also crosses the Lower Uxbridge Brook Wetland (provincially significant) and locally significant Vroomanton Wetland.

D2A/E1 severs the Brock 1 Wetland Complex and removes the edge of the 'South of Wilfrid' Wetland, both of which are locally significant. D2B/E1 encroaches on Gibson Hill Swamp near the fen unit, which is a unique wetland type in the entire study area and considered provincially significant.

All routes cross the Brock 2 locally significant wetland complex at the eastern end of the routes. D2A/E1 and D2B/E1 remove the south edge of the Brock 3 Wetland Complex.

All of the route alternatives have high impacts to wetlands, but D1/E1 is considered to be the greatest with D2B/E1 slightly lower, and D2A/E1 slightly lower still.

Large areas of forest are removed in all sizes of forest patches for all of the route alternatives. D1/E1 has the smallest loss with 57 ha., D2A/E1 similar with 62 ha. and D2B/E1 the largest at 86 ha.. There is a high diversity of vegetation on all three routes, all with locally significant species that may be affected. All routes cross riparian forested habitat associated with first and second order streams, which are typically dependent on shading and organic matter inputs from this vegetation.

In summary, all the alternatives encounter significant and sensitive environments along their length, passing through areas of high quality wetland, including a bog and a fen, and forest providing habitat for rare species. D1/E1 has the potential to result in greater fragmentation effects to wetlands, and is found to have the richest habitat with the highest number of bird species encountered in the study area and highest diversity in the study area. Salamanders, an unusual species in the study area, are also

encountered along this route. D1/E1 is considered to produce the highest impacts, with D2B/E1 producing lower impacts, and D2A/E1 somewhat lower still.

All the routes cross an equivalent area of permeable soils ranging from 75 ha. at D1/E1 to 80 ha. at D2A/E1. D1/E1 contains the largest area of shallow water table influence (23.5 ha.), compared with 13 ha. and 17 ha. for D2A/E1 and D2B/E1, respectively. Although all three routes present moderate impacts to ground water, D2B/E1 was considered to have slightly higher impact on the basis of the area of permeable soils affected.

3.0 Social Environment

3.1 Community Effects

The alternatives have similar property impacts: D2A/E1 displaces 10 residences, while D1/E1 and D2B/E1 displace 18 and 17 residences, respectively. The alternatives disrupt between 63 and 68 properties, with D1/E1 disrupting the least number of properties.

D1/E1 also disrupts a school (at Durham Road 12) and has 5 crossings of snowmobile trails; the other alternatives have 4 crossings of such trails.

The alternatives have similar impacts to community cohesion, stability and character. All three routes represent a new road corridor passing through Brock Township, a large, stable rural area, with neither alternative displacing unique community features.

The alternatives have similar community mobility impacts, with 64 to 71 homes potentially affected (D2B/E1 affects the least number of homes), and similar potential for disruption to emergency services, with 42 to 65 residences potentially affected (D2A/E1 generally affects the least number of homes).

Overall, the alternatives all have the same community impacts.

3.2 Aesthetics

The alternatives have similar visual impacts, with D2B/E1 having the highest visual impacts (79 residences). D1/E1 impacts 58 residences while D2A/E1 impacts 59 residences.

3.3 Noise

D2A/E1 has the lowest potential noise impacts, with 35 residences affected, including 11 residences with moderate impacts, 4 residences with high impacts and 2 residences with significant impacts. D1/E1 affects 46 residences, including 18 moderate impacts, and 9 high impacts, while D2B/E1 impacts 52 residences, including 24 moderate impacts, 8 high impacts and 3 significant impacts.

4.0 Economic Environment

4.1 Agriculture

Each of these route alternatives yields high agricultural impacts.

Route D1 displaces three high value, five medium value and nine low value farms. Route D2B displaces five high value, one medium value and seven low value farms. Route D2A has the lowest impact of the three alternatives, displacing four high value, three medium value and seven low value farms. However, the impact of these alternatives relative to other intersections is high.

Route D2B has the highest impact with respect to severances, producing a large number of diagonal, horizontal and vertical severances. Route D1 has fewer severances compared to Route D2B, and Route D2A has the lowest number of severances of the three alternatives, but all three routes produce relatively high severance impacts.

Route D1 yields the highest degree of isolation of working fields from farm complexes. Routes D2A and D2B have approximately equal impact, which is two-thirds that of Route D1. Overall, Route D2A has the lowest impact on farm operation units.

None of the three routes displace specialty crops. Route D1 has the greatest impact due to its displacement of field crops and organic and Class 1-2 soils. Routes D2A and D2B have approximately equal levels of impact, although Route D2B displaces fewer field crops and is therefore the preferred alternative for this indicator.

Route D2A has the highest impact on linked farming operations, with two moderate impacts to farms and one minor impact. Route D1 has minor impacts to three linked farming operations, while Route D2B has only one minor impact.

4.2 Commercial/Industrial

The alternatives do not have any commercial/industrial impacts.

5.0 Cultural Environment

5.1 Archaeology

D2A/E1 directly impacts three Paleo-Indian sites, including the highly significant Udora site. D2B/E1 directly impacts four Paleo-Indian sites, including the Udora site. D1/E1 has no direct site impacts.

The three routes have comparable impacts on land within 200 m of water but D2A/E1 has somewhat less impact than the other two routes. All impact significant amounts of land within 200 m of water.

D2B/E1 follows the ancient beach ridge most closely. The other two routes have far less impact than D2B/E1 on land within 500 m of an ancient beach ridge.

D1E1 has a moderate potential for impacting archaeological remains; D2A/E1 has a high potential for impacting archaeological remains; and D2B/E1 has a very high potential for impacting archaeological remains.

5.2 Historical

D1/E1 displaces 16 farm complexes and 11 roadscares and disrupts 40 farm complexes, 5 roadscares, 2 cemeteries and 2 settlements. D2A/E1 displaces 15 farm complexes and 8 roadscares and disrupts 30 farm complexes, 6 roadscares, 1 cemetery and 1 settlement. D2B/E1 displaces 14 farm complexes and 8 roadscares and disrupts 27 farm complexes, 6 roadscares, 2 cemeteries and 2 settlements.

D2B/E1 has the least potential adverse impact with the lowest displacement effects and lowest disruption effects. D1/E1 is considered to have the greatest impact having highest impacts through both displacement and disruption of all types of cultural landscape units.

All have moderate impacts, as they involve displacement and disruption effects.

Trade-offs - D1/E1 vs. D2A/E1 vs. D2B/E1

The alternatives provide similar transportation benefits and have similar community and cost impacts. D2B/E1 is not preferred by any criteria except historical, where it is slightly preferred. Overall, D2B/E1 is not preferred.

D1/E1 has lower fisheries and ground water impacts than D2A/E1, but the highest impacts to vegetation, wetlands (which are more significant) and wildlife. In this trade-off, D2A/E1 is preferred.

D2A/E1 also has lower noise impacts, and the slight differences in the other criteria do not clearly identify a preferred alternative.

D2A/E1 is therefore preferred.

FACTOR/Criteria	D2C/E1	D2D/E1	D2D/E2	D2E/E1	D2E/E2	COMMENT
1. TRANSPORTATION 1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	2nd	1st	1st	2nd	2nd	The D2D alternatives have a higher DHV due to an additional interchange with Highway 48 in the vicinity of Durham Road 23. No other significant differences were found.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	SAME	SAME	SAME	No significant differences to Network Compatibility were found.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 	2nd	3rd	2nd	3rd	1st	All alternatives provide a low benefit to network compatibility.
2. NATURAL ENVIRONMENT 2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	2nd	1st	2nd	1st	2nd	D2D/E1 and D2E/E1 have higher cost impacts because they require more structures over wetlands. D2C/E1, D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower impacts. D2D/E1 and D2E/E1 have moderate cost impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 	3rd	3rd	2nd	2nd	1st	All route impacts of D2D/E2 and D2E/E2 are the same (critical crossing of walleye spawning habitat). D2C/E1 encroached on potential cold water habitat also crosses 2-3 km upstream of walleye spawning habitat. D2D/E1 and D2E/E1 share comparable impacts (2-3 km upstream of walleye spawning habitat).
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 	3rd	3rd	2nd	2nd	1st	D2C/E1, D2E/E2 and D2D/E2 produce high impacts to fisheries, D2D/E1 and D2E/E1 produce moderate impacts. D2C/E1, D2D/E1 and D2D/E2 routes have higher impacts on the area's sensitive species (proximity to heronry). D2E/E1 has higher impacts to forested habitat. D2E/E2 has low impacts to wildlife, D2D/E2 and D2E/E1 have moderate impacts, and D2C/E1 and D2D/E1 have high impacts.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 	5th	3rd	1st	4th	2nd	D2C/E1 crosses standing water in the high quality Gibson Hill Swamp, in addition to swamp and extensive forest habitat, the Swamp has a high interaction with ground water. D2D/E1 crosses the same wetland, but along an existing disturbance at the extreme north edge, but has similar forest impacts. D2D/E2 has similar wetland impacts to the latter, but has small forest impacts. D2E/E1 has a small wetland impact but large forest impacts, while D2E/E2 avoids both the wetland and the forest. D2C/E1 produces high impacts to wetlands, D2D/E2, D2D/E1 and D2E/E1 produce moderate impacts, while D2E/E2 has no impact.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 	3rd	3rd	2nd	2nd	1st	E1 routes all cross larger forests than the E2 routes E1 routes also cross more locally significant species and locally significant vegetation units than the E2 routes More stream crossings occur in the E2 routes than the E1 routes D2C/E1, D2D/E1 and D2E/E1 produce moderate impacts to vegetation. Of these three, D2C/E1 has the highest impact and D2D/E1 has the lowest impact. D2D/E2 and D2E/E2 produce low impacts, with D2D/E2 having slightly lower impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	SAME	SAME	SAME	SAME	SAME	Relatively large areas of highly permeable soil along all routes Minor areas of shallow ground water table except D2E/E2 which has none No permits to take water Relatively large areas sensitive to contamination along all routes D2C/E1 and D2D/E1 produce high impacts to ground water. D2D/E2 and D2E/E1 produce moderate impacts while D2E/E2 produces low impacts.
						No Earth Science ANSI's in vicinity of alignment
						None of the alternatives produce an impact.

FACTOR/Criteria	D2C\E1	D2D\E1	D2D\E2	D2E\E1	D2E\E2	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 	2nd	1st	3rd	2nd	3rd	<p>All the alternatives linearly split Brock Township. However the alternative which connects to E2 add the impact of splitting the Beaverton area as well. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred to D2D/E2 and D2E/E2. Of D2C/E1, D2D/E1, and D2E/E1, D2D/E1 is slightly preferred as utilizing the existing highway corridor is more consistent with the existing character of the area.</p> <p>D2C/E1, D2D/E1, D2E/E1 produces moderate impact to community effects but D2D/E1 produces slightly lower impacts to community effects.</p>
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 	1st	1st	3rd	2nd	3rd	<p>Alternatives which connect to E2 visually impact more residents than E2. Impacts along the D segments are similar. Therefore, D2C/E1, D2D/E1 and D2E/E1 are preferred.</p> <p>D2C/E1, D2D/E1, D2E/E1 produces moderate impact to aesthetics but D2C/E1 and D2D/E1 produces slightly lower impacts to aesthetics. D2D/E2 and D2E/E2 produce high impacts to aesthetics.</p>
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 	2nd	3rd	1st	2nd	3rd	<p>The number of noise sensitive receivers experiencing an increase above existing is much lower with those alternatives which connect to E1. D2D minimizes impacts to those residences in the existing Highway 48 corridor. Therefore, D2D/E1 is preferred.</p> <p>D2D/E1 produces a low impact, D2C/E1 and D2E/E1 produce moderate noise impacts, and D2D/E2 and D2E/E2 produce high noise impacts.</p>
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 	3rd	1st	3rd	2nd	3rd	<p>All routes produce high impacts to agricultural viability, but Routes D2D/E1 and D2D/E2 produce slightly lower impacts than the other routes. The E2 routes produce high impacts to soil capability while the E1 routes produce moderate impacts. The routes generally produce moderate impacts to linked farming operations, except the D2D routes, which produce low impacts.</p> <p>Routes D2D/E1 and D2E/E1 produce moderate impacts to agriculture, with Route D2D/E1 producing slightly lower impacts than the other routes. The other routes produce high impacts to agriculture.</p>
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	SAME	SAME	SAME	SAME	SAME	<p>D2D/E1 and D2D/E2 result in the displacement of two businesses.</p> <p>D2D/E1 and D2D/E2 result in low impacts while the other alternatives result in no impacts.</p>
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 	2nd	1st	1st	1st	1st	<p>D2C/E1 has one more crossing of major drainage than other routes.</p> <p>D2C/E1 produces moderate impacts while all other alternatives produce similar low impacts.</p>
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 	4th	1st	2nd	5th	3rd	<p>D2D/E1 displaces least number of cultural landscape units and disrupts low number of cultural landscape units.</p> <p>All alternatives have moderate impacts with D2D/E1 having the overall lowest impacts.</p>
SUMMARY OF TRADE-OFFS Alternatives that connect to E1 were preferred to E2 because the lower social environment impacts more than offset the natural environment impacts. D2E/E1 was preferred to D2C/E1 because of much lower overall effects. D2D/E1 was preferred over D2E/E1 because the lower agricultural and social environment impacts more than offset the natural environment impacts. THEREFORE, D2D\E1 IS PREFERRED						

Preferred D\E with C

1.0 Transportation

1.1 Traffic Operations

All alternatives increase the capacity of the road network, providing a benefit to traffic operations. The D2D alternatives include an interchange with Highway 48 east of Pepperlaw. This interchange serves western Georgina and the Port Bolster area, and increases the peak hour volume on these alternatives from 3300 vehicles (the peak hour volume for the other alternatives) to 3750 vehicles. The D2D alternatives therefore provide a greater benefit to traffic operations.

1.2 Network Compatibility

All routes produce the same benefits to network compatibility; they all provide the same benefits to the local road network.

1.3 Cost

Alternative D2E/E2 has the lowest construction and maintenance costs, with D2C/E1 and D2D/E2 having slightly higher costs (between 15% and 23% higher than D2E/E2). D2D/E1 and D2E/E1 have higher construction and maintenance costs (between 24% and 36% higher than D2E/E2) because they are slightly longer (2% to 9% longer than D2E/E2) and require additional structures over wetlands.

D2C/E1, D2D/E2 and D2E/E2 have low cost impacts, with D2E/E2 having slightly lower costs. D2D/E1 and D2E/E1 have moderate cost impacts.

2.0 Natural Environment

Two alternatives D2D/E2, D2E/E2 cross eight (8) permanently flowing watercourses each. E2 crosses two watercourses, White's Creek and the Beaverton River, with significant fish communities (bass) and possibly having critical habitat for bass spawning, although this has not been confirmed. The E2 route also crosses a reported walleye spawning area (critical habitat) in the Beaverton River, as well as a tributary of the Talbot River, where walleye spawning is known to occur downstream in the main channel. Two crossings of Alsops Creek have no known significant or sensitive fish habitat or communities present. Two tributaries of Pepperlaw Brook are also crossed by these alignments. Downstream of the confluence of these tributaries, a diverse community of sunfish, sculpin and walleye inhabit the watercourse.

The D2D and D2E segments of this route comparison have crossings of only one (1) non-permanent watercourses and therefore have an equal level of impact.

Alternatives D2D/E1 and D2E/E1 have similar impacts as they both cross seven (7) permanently flowing watercourses. The E1 route segment is located approximately 2 to 3 km further upstream of the E2 crossings of White's Creek and the Beaverton River, where there are known significant and sensitive habitats and fish communities as described above. While at the E1 crossing of the Beaverton River there are no known sensitive or significant fish communities, the potential for walleye migration and spawning in this vicinity has been assumed, given the presence of migratory runs further downstream. One fewer crossing of Alsops Creek results from the location of this route. These routes also cross two tributaries of Pepperlaw Brook.

Alternative D2C/E1 crosses eight (8) permanently flowing watercourses including the 5 described for E1 above, one tributary of Vrooman Creek and two of Pepperlaw Brook. Downstream of the confluence of these tributaries, a diverse community of sunfish, sculpin and walleye inhabit the watercourse. D2C/E1 also encroaches on potential coldwater habitat in the main branch of Vrooman Creek, as suggested by the presence of sculpins, a sensitive species indicative of coldwater conditions.

Alternatives D2D/E2 and D2E/E2 produce higher impacts to fish and aquatic habitat based on the proximity to habitats and fish communities of known sensitivity or significance. D2C/E1, D2D/E1 and D2E/E1 produce moderate impacts to fish and aquatic habitats, with D2C/E1 having a slightly greater effect than the other two with the common E1 section.

All five alternatives (D2C/E1, D2D/E1, D2D/E1, D2D/E2, D2E/E2) cross local wildlife corridors associated with the Alsop's and White's Creek valley lands. D2D/E2 and D2E/E2 also cross a second local wildlife corridor to Lake Simcoe through the McLennan Beach Wetland. D2C/E1 however, produces the greatest impact to wildlife of these route alternatives as it crosses a local wildlife corridor three times which runs from the Beaverton River through Gibson Hill Swamp and then branches south through Wilfred Bog and west to Pepperlaw. The D2C and D2D segments of these alternatives pass within one kilometer of a heronry.

All of the route alternatives encounter indicator bird species for interior forest and large swamp habitats as reported in the Natural Environment Technical Report (GLL 1997). Rare bird species are encountered on D2C as well as the E1 segments which also indicate high quality, extensive forest habitat. No rare species are encountered on D2D/E2 or D2E/E2.

Route alternative D2E/E2 contains no wetlands along its length. The remainder of the alternatives in this section all encounter wetlands and result in some significant losses. The greatest loss is on Route D2E/E1 where 11.4 ha. of Brock 2 wetland are affected by the route. D2D/E1 and D2D/E2 affect 8.1 ha. and 6.8 ha. of the Gibson Hill Swamp, respectively. D2C/E1 results in the loss of 7.1 ha. of the same swamp but also impacts marginally on the fen portion of this swamp which is an extremely rare feature in the study area. Generally, the E1 segment of the alternatives contains more forest adjacent to the wetlands than the E2 segment, although alternative D2D/E1 is found to have the most farmland adjacent which reduces its complimentary habitat value. D2D/E1 has the highest number of marsh units which are considered more sensitive to impacts than swamps, and also appears to have the highest interaction with the shallow ground water system.

The greatest forest losses are associated with route segment E1 having approximately 2.5 times greater losses than those on segment E2. One large forest is crossed by D2C/E1 which appears to provide interior breeding bird habitat, as described above. The highest diversity of vegetation is encountered along the D2C/E1 route, followed by the E1 segments, as evidenced by the Simpson's Diversity Index results reported in the Natural Environment Technical Report (GLL 1997). E2 route segments are the least diverse. A number of rare plant species (Tuckerman's Sedge, Balsam Ragwort and Prickly Ash) are encountered along route alternatives D2C/E1, D2D/E1 and D2E/E1, primarily associated with the E1 segment of the route alignment.

In summary, D2E/E2 produces the lowest impacts as it encounters no wetlands, has low forest area losses, crosses 3 local wildlife corridors and exhibits relatively low diversity of plant species. D2D/E2 also has a similar level of impact but lies within one kilometer of a heronry. D2E/E1 has the greatest forest loss, greatest wetland loss, crosses two local wildlife corridors and contains one (1) rare bird species along its length. D2D/E1 also has large forest losses but only moderate wetland losses. It crosses two local wildlife corridors and encounters one rare bird species. D2C/E1 produces the highest level of impact crossing large areas of forest, a moderate level of wetland, although close to the fen component of the wetland which is a very rare feature within the study area, crosses five (5) local wildlife corridors and encounters 2 rare species, both of which are indicative of the high quality forest and wetland habitats found along this route alignment.

No earth science ANSIs or permitted water taking are present on any of the route segments.

Relatively large areas of permeable soils are crossed by the five route alternatives with D2E/E1 crossing the largest area (171 ha.) and D2D/E2 crossing the smallest (97 ha.). The three other segments, D2C/E1, D2D/E1, and D2E/E2 affect 128, 133 and 140 ha. of permeable soils, respectively. D2E/E1 also crosses the largest area with high water table (11.4 ha.) associated with Brock 2 wetland. D2E/E2 has the lowest impact as it does not cross any areas with high water table. The three other segments, D2C/E1, D2D/E1, and D2D/E2 cross 7, 8, and 7 ha. with high water table within Gibson Hill Swamp, respectively.

D2E/E1 produces the highest impacts to ground water, while D2C/E1, D2D/E1 and D2E/E2 produces moderate impacts. D2D/E2 produces the lowest impacts and is the preferred route.

3.0 Social Environment

3.1 Community Effects

Route "E1" passes east of Highway 12/48 while "E2" passes west of Highway 12/48, along the eastern urban boundary of Beaverton. The "E2" alternative separates the urban area of Beaverton from the highway commercial development node along Highway 12/48. The "E2" alternatives have a high impact to community cohesion, due to this splitting of the community of Beaverton. The "E1" routes have less of an impact to cohesion, since they do not sever the Beaverton community at large, but they represent a new corridor crossing Brock Township, and have a moderate impact to cohesion.

The "E1" alternatives have a higher impact to community stability, because they pass through a large, stable rural area. The "E2" alternatives are in close proximity to the development boundary for Beaverton (a non-stable area in transition), and have less of an impact to community stability.

The "D2D" alternatives have less of an impact to community character, since they closely parallel an existing highway corridor, having less of a change to the landscape.

The "E2" alternatives are generally less disruptive to community mobility (30 to 33 residences potentially affected) and have less potential disruption to emergency services (6 to 9 residences affected) since most of the road crossings would be maintained with grade separations or interchanges. This is reflective of the fact that E2 splits the Beaverton community and would require more road connections be maintained between Beaverton and Highway 12/48.

Of the "E1" alternatives, "D2C" has the highest disruption to community mobility (56 residences potentially impacted) and disruption to emergency services (41 to 54 homes potentially affected). "D2D" and "D2E" have similar disruption impacts: 43 to 48 residents with potential community mobility impacts, and 35 to 43 residences with potential affects to emergency services.

3.2 Aesthetics

The "E2" routes generally have higher aesthetic impacts due to the proximity of E2 to Beaverton. The "E2" alternatives impact 87 to 92 residences, while the "E1" routes, which are further from Beaverton, impact 32 to 37 residences.

3.3 Noise

The "E2" alternatives have higher potential noise impacts due to the proximity to Beaverton. The "E1" alternatives, which are further from Beaverton affect 21 to 27 residences with 12 to 16 homes having noticeable impacts (greater than 5 dBA increase in noise levels). The "E2" alternatives impact 62 to 63 residences, with 41 to 42 residences having noticeable impacts.

4.0 Economic Environment

4.1 Agriculture

Route D2D/E1 is the preferred alternative since its overall impact to agriculture is lower compared to the other route alternatives. Its impact is rated as moderate, as is that of Route D2E/E1, while the other three route alternatives produce high impacts to agriculture.

All five routes have high impacts to the operational viability of farm units. Route D2D/E1 has the lowest impact, displacing three high value farms and 6 low value farms. Routes D2E/E1 and D2E/E2 displace the most capital investment, followed closely by Route D2C/E1. Route D2C/E1 creates the greatest number of diagonal and horizontal severances, and the other alternatives are approximately equal with respect to impact from severances. Routes D2C/E1, D2D/E1 and D2D/E2 all have high impacts with respect to isolation of working fields from their farm complexes. Routes D2E/E1 and D2E/E2 have moderate impacts in this respect. Overall, Route D2D/E1 has the lowest impact to farm operation units.

No specialty crops are displaced, but large amounts of field crops, organic and Class 1-2 soils are displaced by all route alternatives. Route D2D/E2 has the highest impact with respect to the amount of crop and pasture land and amount of soils with capability for agriculture that are displaced.

Routes D2C/E1, D2E/E1 and D2E/E2 result in the isolation of between 25% to 50% of fields from farm complexes for two farms each, while one farm is affected in this manner by each of Routes D2D/E1 and D2D/E2. Therefore, the two latter routes are preferred, and are ranked equally, with respect to linked farming operations.

4.2 Commercial/Industrial

The "D2D" alternatives displace two businesses along Highway 48: Port Bolster Stone and Gravel, and Summer Breeze Trailer Park. The stone business is a retail outlet operation, not a production site. The trailer park is primarily a seasonal operation with approximately 50 sites, with some trailers stored on site year-round.

The other alternatives do not displace or disrupt any businesses.

5.0 Cultural Environment

5.1 Archaeology

All routes directly impact a known Paleo-Indian site. Furthermore, all the routes have a low potential impact on archaeological remains, except for D2C/E1 which has a moderate potential impact on archaeological remains. D2C/E1 crosses one more major watercourse than the other routes.

5.2 Historical

D2C/E1 displaces 14 farm complexes and 7 roadscapes and disrupts 16 farm complexes, 4 roadscapes, 1 historical settlement and 1 cemetery.

D2D/E1 displaces 10 farm complexes and 4 roadscapes and disrupts 19 farm complexes, 4 roadscapes, 1 historical settlement and 1 cemetery.

D2D/E2 displaces 12 farm complexes and 4 roadscapes and disrupts 19 farm complexes, 2 roadscapes, 2 historical settlements and 1 cemetery.

D2E/E1 displaces 13 farm complexes and 7 roadscapes and disrupts 22 farm complexes, 3 roadscapes, 1 historical settlement and 2 cemeteries.

D2E/E2 displaces 12 farm complexes and 7 roadscape and disrupts 24 farm complexes, 1 roadscape, 2 historical settlements and 2 cemeteries.

D2D/E1 has the least potential adverse impact with the lowest number of displacement effects to "very important" cultural landscapes and a low number of disruption effects. D2D/E2 has the second least potential adverse effects with a low number of displacement effects to "very important" cultural landscapes and a low number of disruption effects.







D2E/E1 is considered to have the greatest impact having a high number of impacts through both displacement to "very important" cultural landscapes and disruption. D2C/E1 has the second greatest impact through having the highest number of potential displacement effects to "very important" and "important" cultural landscapes ameliorated by the lowest number of disruption impacts. D2E/E2 has a high number of impacts to "very important" and "important" cultural landscapes and the highest number of disruption impacts.

All are of moderate impact as they involve displacement and disruption effects.

Trade-offs D's with C

None of the route alternatives produced lower impacts than the other alternatives for each criterion. D2D/E1 was preferred by the Project Team because:

- the E1 routes avoid the community of Beaverton, thereby reducing community effects, noise and aesthetic impacts to this community;
- Of the "E1" alternatives, "D2C" has the highest natural environment impacts, and higher social, economic and cultural impacts than D2D/E1; "D2C" was therefore not preferred;
- between D2D/E1 and D2E/E1, D2D/E1 had lower social, economic and cultural impacts, which outweighed the higher natural environment impacts.

FACTOR/Criteria	B1B	B1C	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	B1B and B1C produce similar benefits to traffic operations. Both produce a moderate benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes. Both routes provide a low benefit to traffic operations.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			B1B has an additional grade separation (at Ravenshoe Road), resulting in higher construction and maintenance costs. Both routes have low cost impacts, with B1C having slightly lower cost impacts.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 	SAME	SAME	No permanently flowing watercourses crossed by either segment. Several non-permanently flowing watercourses crossed and encroached by both routes. No sensitive or significant fish communities encountered. Both alternatives produce a low impact on fisheries and aquatic habitat.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 	SAME	SAME	A small loss of wildlife habitat occurs on the common segment. Both alternatives produce low impacts
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 			B1C does not have any effects upon wetlands. B1B encroaches upon a wetland which may affect wetland function, particularly wetland/ground water interaction. B1C does not affect wetlands, while B1B produces a low effect.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 	SAME	SAME	Both alternative impact a small woodlot with a fringe impact on the common section. Both alternatives produce low impacts
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			Relatively small areas of highly permeable soil affected on B1B and B1C. No areas of high ground water table crossed by B1C. No permits to take water are affected. Both alternatives have virtually no impact to ground water, but B1B has slightly more impact than B1C.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Earth Science ANSI's in vicinity of alignment. Neither alternative produces an impact.



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

B1B vs. B1C

FACTOR/Criteria	B1B	B1C	COMMENT
3 SOCIAL ENVIRONMENT			
3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 	<input checked="" type="radio"/>	<input type="radio"/>	B1C is located with the boundaries of the Keswick Secondary Plan. The location of this alternative severs the major growth area of Keswick and has a high impact to future development. B1B produces a low impact to community effects and B1C produces a high impact to community effects.
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 	<input type="radio"/>	<input checked="" type="radio"/>	Both alternatives are in close proximity to an urban area with existing major roads, however B1B visually impacts slightly more farmstead residences. Both alternatives produce a low impact to aesthetics, however B1C produces slightly lower impacts.
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 	SAME	SAME	Both alternatives produce similar impacts. Both alternatives produce a low impact to noise.
4 ECONOMIC ENVIRONMENT			
4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 	<input type="radio"/>	<input checked="" type="radio"/>	B1B has slightly higher impact to operational viability of agricultural operations and linked farming operations. Both routes have minor impacts to soil capability. Both alternatives produce low agricultural impacts, but B1C produces slightly lower impacts.
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	<input checked="" type="radio"/>	<input type="radio"/>	B1C results in the displacement of two additional businesses. B1B results in a low impact, while B1C results in a moderate impact.
5 CULTURAL ENVIRONMENT			
5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 	<input checked="" type="radio"/>	<input type="radio"/>	B1C has a higher impact to registered sites. B1C produces a high impact. B1B produces a low impact.
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 	<input type="radio"/>	<input checked="" type="radio"/>	B1C is considered to have the least adverse impact, having fewer cultural landscape units disrupted than B1B. Both alternatives have a low impact, with B1C having slightly lower impacts.

SUMMARY OF TRADE-OFFS

Although B1B produces slightly higher wetland, aesthetic, agricultural and historic impacts and results in a moderately higher cost, B1B is considered to have lower overall impacts than B1C due primarily to much lower community effects.

THEREFORE, B1B IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

B1B vs. B1C

B1B vs. B1C

1.0 Transportation

1.1 Traffic Operations

There are no significant differences in traffic operations between these two minor route segments; both provide similar benefits.

1.2 Network Compatibility

There are no significant differences in network compatibility between these two minor route segments; both provide similar benefits.

1.3 Cost

B1B has slightly higher construction and maintenance costs (11% and 12% higher, respectively) than B1C, due to an additional grade separation.

2.0 Natural Environment

Neither route segment B1C or B1B crosses permanently flowing watercourses which are considered to have a higher potential impact to fisheries than ephemeral (non-permanent) systems. Segment B1B crosses two (2) non-permanently flowing watercourses and encroaches upon four (4) whereas B1C crosses one (1) and encroaches on 3 non-permanently flowing watercourses. These watercourses may provide seasonal habitat for fish but no significant or sensitive species were noted in this area. Although B1B crosses and encroaches on more watercourses than B1C, these impacts are not considered to be significant. Both route alternatives therefore produce a low impact on fisheries and aquatic habitat.

B1B crosses the toe of the Maskinonge Wetland which is provincially significant, removing approximately 1.3 ha. of wetland vegetation and encroaching on an additional 6.9 ha. of this wetland. A small woodlot is crossed by both B1B and B1C which produces a low impact to wildlife as the woodlot is considered too small to provide high quality habitat as evidenced by the lack of indicator species identified along the common portion of these routes. The woodlot is linked in three linear segments which are fragmented by the route as it is aligned along the east edge of two of the segments and the west edge of the third, effectively reducing the woodlot from a linked forest of approximately 16 ha. to three patches of woodlot that range from 2.5 to 6 ha. each. Both routes equally impact on approximately 4 ha. of forest vegetation and the linkage between this habitat type. B1C is marginally preferred over B1B on the basis of its impacts to wetland vegetation and habitats.

Neither route alignment B1B or B1C crosses any Earth Science ANSIs and therefore does not produce an impact to this criterion. There are no permitted water taking on either route.

Both B1B and B1C affect a small area (approximately 22 ha.) of highly permeable soils, largely sands associated with lacustrine deposits which are considered to be more susceptible to contamination and alteration through highway construction. Approximately 1.3 ha. of shallow ground water associated with the Maskinonge Wetland is affected by route segment B1B. Both route alternatives are similar in their effects but B1B produces a slightly higher impact associated with the wetland.

3.0 Social Environment

3.1 Community Effects

The two alternatives have similar property impacts; B1B displaces more residences (5 vs. 3), and disrupts fewer properties (19 vs. 21).

B1C, however, passes inside the Keswick urban boundary, disrupting a proposed development area known as the South Keswick Secondary Plan, which incorporates 15,000 residential units, two high schools, a regional shopping mall and recreational uses. This alternative is not consistent with the proposed use for these lands, and has a significant impact to the planned community of Keswick.

Both alternatives have similar impacts to community cohesion, stability and character. Community cohesion is not greatly impacted, since links between Keswick and northern East Gwillimbury are maintained via grade separations on the road network. Community stability is not greatly impacted, since both alternatives pass in close proximity to Keswick, a non-stable area in transition. Community character is not greatly impacted, since no unique community features are displaced.

The two alternatives do not impact community mobility and do not create potential disruptions to emergency services.

3.2 Aesthetics

Both alternatives have low visual impacts, with B1B impacting 6 farmsteads, and B1C impacting 3 farmsteads.

3.3 Noise

The alternatives have similar low noise impacts, with B1B impacting 9 residences (7 moderately affected, 2 highly affected) and B1C impacting 11 residences (9 moderately affected, 2 highly affected).

4.0 Economic Environment

4.1 Agriculture

Each of these route alternatives produce low agricultural impacts. Route B1C is the preferred alternative due to its lower impact to the operational viability of farm units. Route B1B displaces a high value farm whereas Route B1C does not. Route B1C also tends to follow the mid-concession property boundaries whereas Route B1B diagonally bisects agricultural properties, disrupting working fields to a greater degree.

Both routes displace an equal but minor amount of Class 1 or organic soils. Route B1C displaces slightly more field crops but does not displace any pasture or grazing land.

Route B1C is the preferred alternative with respect to linked operations. Route B1B has a relatively minor impact by displacing less than 25% of the working fields from the main farm complex of one linked farming operation. Route B1C, however, has no impacts on linked operations of farms.

4.2 Commercial/Industrial

Both alternatives displace a real estate office, while B1C also displaces two industrial businesses (a dormant sod equipment manufacturing business and Kesmac - CSA to identify Kesmac).

5.0 Cultural Environment

5.1 Archaeology

B1B has no direct archaeological site impacts. B1C, on the other hand, impacts two Paleo-Indian sites and one 19th century church with a possible associated cemetery. One of the impacted Paleo-Indian sites is the highly significant Deavitt site.

Both B1B and B1C impact the same amount of land within 500 m of an ancient beach ridge. B1B impacts more land within 200 m of water than B1C.

Both routes have a high potential to impact archaeological remains.

5.2 Historical













B1B displaces 1 farm complex and 1 roadscape and disrupts 9 farm complexes. B1C displaces 2 farm complexes and 1 roadscape and disrupts 7 farm complexes.

B1B is considered to have the least adverse impact having fewer "very important" cultural landscape units displaced, but slightly more cultural landscape units disrupted than B1C.

B1B displaces only 1 "very important" cultural landscape unit and is of low impact. B1C displaces two "very important" cultural landscape units. Both involve similar disruption effects.

Trade-offs - B1B vs. B1C

B1C has a high impact to the community of Keswick and archaeology, but no impact to the Maskinonge Wetland. On the remaining criteria, both routes generate similar impacts. B1B is therefore preferred, since it does not generate any high impacts, and has much lower impacts to Keswick.

FACTOR/Criteria	D2A North	D2A South	COMMENT
1. TRANSPORTATION			
1.1 Traffic Operations <ul style="list-style-type: none"> Examines how well each alternative will allow traffic to move through the study area. 	SAME	SAME	No significant difference in traffic operations was found between D2A North and D2A South. Both routes produce a low benefit to traffic operations.
1.2 Network Compatibility <ul style="list-style-type: none"> Examines how compatible each alternative is with the existing road network and the ability to upgrade each alternative to meet future needs. 	SAME	SAME	Effect on traffic volumes and operations on parallel/crossing roads and staging ability cannot be appropriately assessed for these minor route segments. On the remaining indicators, no significant differences were found between the two routes. Both routes produce a low benefit to network compatibility.
1.3 Cost <ul style="list-style-type: none"> Examines the short- and long-term cost of each roadway alternative. 			D2A North has higher costs than D2A South, because D2A North is a longer route and has higher property costs. Both routes have low cost impacts, with D2A South having slightly lower cost impacts.
2. NATURAL ENVIRONMENT			
2.1 Fisheries and Aquatic Habitat <ul style="list-style-type: none"> Examines the impact each alternative will have on water quantity, quality, fish species and aquatic habitat. 			D2A North results in a potentially greater impact to sensitive coldwater fish community (sculpin) and warm water communities with significant species (bass). Both routes cross one permanently flowing stream. D2A South produces low impacts to fisheries and aquatic habitat while D2A North produces moderate impacts.
2.2 Wildlife <ul style="list-style-type: none"> Examines the impact each alternative will have on wildlife species and habitat. 			D2A South passes within 1 km of a heronry. Regionally rare species found within D2A South corridor. D2A South produces moderate impacts to wildlife while D2A North produces low impacts.
2.3 Wetlands <ul style="list-style-type: none"> Examines the impact each alternative will have on wetland resources. 			Wet swamp removed due to crossing by D2A South. D2A North does not cross a wetland, but encroaches upon a seasonally inundated swamp. D2A South produces a moderate impact on wetlands, while D2A North produces a low impact.
2.4 Vegetation <ul style="list-style-type: none"> Examines the impact each alternative will have on vegetation units and individual specimens. 			D2A South results in marginally greater forest displacement than D2A North. Both alternatives produce low impacts. D2A North produces slightly lower impacts.
2.5 Ground Water <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial and domestic water supply. 			Minor areas of highly permeable soil crossed by both alternatives. D2A North covers slightly less sensitive areas. D2A South crosses minor areas of high ground water table. Both routes produce low impacts to ground water, but D2A North produces slightly lower impacts.
2.6 Geology <ul style="list-style-type: none"> Examines the impact each alternative will have on significant landforms. 	No Impact	No Impact	No Earth Science ANSI's in vicinity of alignment Neither alternative produces an impact.















First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D2A (D2A NORTH VS. D2A SOUTH)

FACTOR/Criteria	D2A North	D2A South	COMMENT
3 SOCIAL ENVIRONMENT 3.1 Community Effects <ul style="list-style-type: none"> Examines the impact each alternative will have on communities, neighbourhoods, individuals, and related land uses (residential, institutional, recreational). 			<p>Both alternatives are very similar in all indicators with exception of potential to displace existing residences. From this respect D2A South has the lowest impact and is therefore preferred over D2A North.</p> <p>D2A North produces a high impact to social environment and D2A South produces a moderate social environment impact.</p>
3.2 Aesthetics <ul style="list-style-type: none"> Examines the visual impacts of each alternative. 			<p>Alternative D2A North produces higher aesthetic impacts.</p> <p>D2A North produces a moderate aesthetic impacts and D2A South produces a low aesthetic impacts.</p>
3.3 Noise <ul style="list-style-type: none"> Examines the noise impact each alternative will have on adjacent receivers. 			<p>Both alternatives produce similar impacts but D2A North results in slightly higher impacts.</p> <p>Both alternatives produce moderate noise impacts but D2A South results in slightly lower impacts.</p>
4 ECONOMIC ENVIRONMENT 4.1 Agricultural <ul style="list-style-type: none"> Examines the impact each alternative will have on farming operations and employment. 			<p>D2A North produces slightly higher impacts to agricultural operations and soil capability.</p> <p>Both routes produce high impacts to agriculture, but Route D2A South produces slightly lower impacts.</p>
4.2 Commercial/Industrial <ul style="list-style-type: none"> Examines the impact each alternative will have on commercial, industrial and tourism based businesses and employment. 	No Impact	No Impact	<p>No impacts to commercial/industrial.</p> <p>D2A North and D2A South produce no impact to commercial/industrial.</p>
5 CULTURAL ENVIRONMENT 5.1 Archaeological <ul style="list-style-type: none"> Examines the impact each alternative will have on archaeological features. 			<p>D2A South impacts less land within 500 m of beach ridges than D2A North.</p> <p>D2A North produces moderate impacts. D2A South produces low impacts.</p>
5.2 Historical <ul style="list-style-type: none"> Examines the impact each alternative will have on heritage features. 			<p>D2A South displaces fewer cultural landscape units than D2A North.</p> <p>Both alternatives produce moderate impacts to heritage features and D2A South produces slightly lower impacts.</p>

SUMMARY OF TRADE-OFFS

D2A South resulted in lower overall impacts because of the much lower impacts to community effects, aesthetics, and fisheries and aquatic habitat were considered more significant than the higher wildlife, wetland and vegetation impacts.

THEREFORE, D2A South IS PREFERRED



First Preference



Second Preference

EVALUATION OF ROUTE ALTERNATIVES - TRADE-OFF METHOD

PREFERRED D2A (D2A NORTH VS. D2A SOUTH)

D2A North vs. D2A South

1.0 Transportation

1.1 Traffic Operations

There are no significant differences in traffic operations between these two minor route segments; both provide similar benefits.

1.2 Network Compatibility

There are no significant differences in network compatibility between these two minor route segments; both provide similar benefits.

1.3 Cost

The alternatives have similar cost impacts; operating costs with D2A South are 13% higher due to its greater length.

2.0 Natural Environment

Both alternatives D2A north and D2A south cross one permanently flowing tributary to Vrooman Creek, and one non-permanently flowing watercourse. D2A north is also expected to encroach on Vrooman Creek in another location, whereas a tributary of Vrooman Creek with reported poor habitat characteristics is encroached upon on D2A south.

D2A north encroaches on Vrooman Creek where sculpins, a species indicative of potential cold water habitat, are reported to occur downstream. Bass habitat, indicative of good warm water conditions occurs downstream approximately 2 km and would also experience impacts. In summary, D2A south produces a low impact to fish and aquatic habitat while D2A north is considered to have moderate impacts.

Neither D2A north nor D2A south cross local or regional wildlife corridors. D2A south encounters one regionally rare species and passes within one kilometer of a Great Blue Heronry. Both routes encounter the same number of bird species which indicate high quality forest habitat.

D2A north results in no loss of wetland area but may experience a small encroachment. D2A south is anticipated to have a small loss of the Gibson Hill wetland area, approximately 1.3 ha., and to have a small encroachment.

Both alignments result in a similar level of forest loss (D2A N = 4.8 ha.; D2A S = 7.8 ha.) resulting from fragmentation of small patches.

In summary, D2A south produces a small loss of the Gibson Hill wetland and may impact on one regionally rare bird species. D2A north removes less forest cover, no wetland area and has only minor impacts to wildlife, and therefore is the preferred alignment for these criteria.

No earth science ANSI's are crossed by either route. No permits to take water are crossed. D2A North and D2A South both cross similar areas of permeable soils (12 and 13 ha., respectively). D2A South also crosses a small area (1.3 ha.) of high ground water table. Both routes have low impacts to ground water but the D2A North route is slightly preferred since it does not cross any areas with high ground water table.

3.0 Social Environment

3.1 Community Effects

D2A North has higher property impacts than D2A South; D2A North displaces 6 residences, while D2A South displaces 2 residences. The displacement impacts with D2A North are significant, given the relatively short length of these alternatives, and the proximity of these residences. This impact is comparable to the displacement of a residential cluster. D2A North disrupts 13 properties while D2A South disrupts 15.

The alternatives create similar impacts to community cohesion, stability and character. Both are minor route segments through stable rural areas which do not displace any unique community features.

The alternatives share similar impacts to community mobility (19 to 20 homes affected) and the same potential for disruptions to emergency services (19 homes affected).

3.2 Aesthetics

D2A North impacts 7 residences, while D2A South impacts 3 residences.

3.3 Noise

Both alternatives have low noise impacts; D2A South impacts 3 residences, with 1 moderate impact and 1 high impact; D2A North impacts 4 residences, with 3 moderate impacts and 1 high impact.

4.0 Economic Environment

4.1 Agriculture

Route D2A South is the preferred alternative with respect to agricultural impacts since Route D2A North creates more horizontal and vertical severances that isolate more field crops and pasture/grazing lands. Also, slightly greater amounts of field crops and Class 1-2 soils are displaced with Route D2A North.

Both alternatives displace high and medium value farms. Route D2A North displaces three high value farms and one medium value farm, while Route D2A South displaces two high value farms and three medium value farms. Route D2A North, however, creates more diagonal and horizontal severances which separate a greater number of working fields from farm complexes. Route D2A South has a lower net effect and is the preferred alternative with respect to farm operations.

Route D2A South is also the preferred alternative with respect to soil capability since Route D2A North displaces slightly more field crops and Class 1 and 2 soils. Large quantities of field crops are displaced for these relatively short route segments, therefore the impacts are moderate relative to other route alternatives in general. Neither route displaces specialty crops, and only minor amounts of Class 1 lands are involved in either case.

Each of these route alternatives result in the isolation of between 25% to 50% of fields from farm complexes for two farms. Therefore, the impacts of these two alternatives are equal with respect to linked operations.

4.2 Commercial/Industrial

The alternatives do not have any commercial/industrial impacts.

5.0 Cultural Environment

5.1 Archaeology

Neither D2A North nor D2A South directly impacts a known archaeological site. D2A North impacts more land within 500 m of an ancient beach ridge than D2A South. Both routes impact the same amount of land within 200 m of water.

D2A North has a moderate potential to impact archaeological remains and D2A South has a low potential to impact archaeological remains.

5.2 Historical

D2A South displaces 6 farm complexes and 2 roadscares and disrupts 9 farm complexes. D2A North displaces 8 farm complexes and 2 roadscares and disrupts 8 farm complexes.

D2A South is considered to have the least adverse impact having fewer "very important" cultural landscape units displaced, but slightly more cultural landscape units disrupted than D2A North.

Both are moderate impacts as they involve displacement and disruption effects.

Trade-offs - D2A North vs. D2A South

The lower social, economic, and cultural environment impacts, as well as lower cost, fisheries and ground water impacts with D2A South outweighed the lower vegetation, wetlands and wildlife impacts associated with D2A North.

D2A South is preferred.

Alternatively, include the following discussion

The indicators for Wetlands and Vegetation assess the impacts to habitat and function of the natural systems in the study area. They are more important criteria than fisheries, since the fisheries in the study area are generally of low to moderate quality, due to the impacts of development and agriculture in the study area.

Ground water impacts are also less important than wetlands and vegetation impacts, because significant impacts would only occur at specific sites with unique characteristics (e.g. highly permeable soils and domestic water supply immediately adjacent to the route alternative), which would be avoidable through route refinements.

APPENDIX 6.D WEIGHTING-SCORING METHOD

6.D Weighting/Scoring Method

The weighting/scoring method produces a single numerical result to reflect the total impacts associated with a route alternative. The shortfalls of weighting/scoring are recognized, however this method provides an opportunity for the proponent to clearly demonstrate the consideration of input by stakeholders in the decision-making process. For these reasons, the Weighting/Scoring Method was used to verify each decision of the Trade-Off Method (Professional Judgment).

With the weighting/scoring method, evaluation criteria are given a weight, based on level of importance, and a score based on the magnitude of the impact. The weight and score of each criterion are multiplied together, and added together with the weight-score product of the other criteria to obtain a total weighted score for the route alternative. The alternative with the highest weighted score (i.e. the highest or lowest, depending on the scoring method used) is generally considered the preferred alternative.

Establishing a Weight (Level of Importance)

To determine the relative weight of each criteria, a total of 100 points were assigned among the five evaluation factors in proportion to the level of importance of each factor to the study area. A total of 100 points were also assigned to each factor and distributed among the criteria in proportion to the level of importance to that factor. Generally, more points are assigned to those criteria which are felt to be more important when assessing impacts generated by route alternatives, and fewer points are given to those criteria which are considered to be less important. The set of weights assigned to the evaluation criteria will be the same for all route alternatives.

Two weighting scenarios were used for this evaluation method. The first utilized a weighting scenario developed by the Project Team, and the second utilized a weighting scenario developed by interested individuals and interest groups.

To develop the Project Team weighting scenario, the specialists in each discipline were responsible for assigning the weights (level of importance) to the criteria within each factor. The Project Team, as a group, developed the weights for each factor.

Interest groups and interested individuals were asked for their input at the second and third set of Public Consultation Sessions to establish the relative weights that participants felt should be given to each criterion. This approach provided the Project Team with an understanding of the relative importance of each evaluation factor and criterion.

The Project Team and 'public' weighting scenarios are shown in Exhibit 6.D.1. The 'public' weights represent the calculated average expressed as a percentage of the numerical weights obtained from 137 comment sheets. The standard deviations provide an indication of the range of variation in numerical weights assigned by the individuals. These standard deviations, as a percent of the calculated average, range from approximately 70% to over 100% of the calculated average value of each criterion weight, indicating a significant variation in opinion as to the relative importance of each evaluation criterion.

Exhibit 6.D.1 - Weighting of Criteria and Factors

WEIGHTINGS OF CRITERIA AND FACTORS		
	PUBLIC	PROJECT TEAM
FACTOR: TRANSPORTATION		
Criteria:		
Traffic Operations	8.74 (10.1)	8.00
Network Compatibility	7.36 (5.7)	8.00
Cost	6.51 (5.4)	4.00
TOTAL FOR FACTOR	22.61	20.00
FACTOR: NATURAL ENVIRONMENT		
Criteria:		
Fisheries & Aquatic Habitat	3.73 (3.2)	5.00
Wildlife	5.37 (3.4)	2.50
Wetlands	4.87 (3.7)	6.25
Vegetation	3.56 (3.2)	6.25
Groundwater	5.97 (4.0)	3.75
Geology	2.27 (2.8)	1.25
TOTAL FOR FACTOR	25.77	25.00
FACTOR: SOCIAL ENVIRONMENT		
Criteria:		
Community Effects	9.01 (7.5)	15.00
Aesthetics	4.33 (3.7)	2.50
Noise	7.14 (5.6)	7.50
TOTAL FOR FACTOR	20.48	25.00
FACTOR: ECONOMIC ENVIRONMENT		
Criteria:		
Agriculture	13.00 (11.6)	20.00
Commercial/Industrial	6.79 (4.3)	5.00
TOTAL FOR FACTOR	19.79	25.00
FACTOR: CULTURAL ENVIRONMENT		
Criteria:		
Archaeology	5.19 (3.9)	2.50
Historical	6.16 (4.6)	2.50
TOTAL FOR FACTOR	11.36	5.00
TOTAL FOR ALL FACTORS	100.00	100.00

* Number in parentheses indicates the calculated standard deviation

In comparing the two sets of weightings, several observations can be made:

- The factor total weights are comparable, with the exception that the Project Team scenario carries a greater weight for the Social and Economic Environments and less weight for Heritage than the public scenario (As noted in Exhibit 4.17, the Project Team gave less weight (importance) to Heritage to avoid overemphasizing social impacts).
- Within the Natural Environment, the Project Team scenario carries more weight for 'habitat' criteria (i.e. aquatic habitat, wetlands, vegetation) than the public scenario (The Project Team considered habitat to be of greater importance, since habitats can serve a large number of wildlife species).

Establishing a Score (Degree of Impact)

The score assigned to each criterion is based on the impact generated. Impacts can range from those that are positive (benefit the environment) to negative (detrimental to the environment). Accordingly, scores ranged between 0-8, as shown:

NEGATIVE IMPACT				NO IMPACT		POSITIVE IMPACT		
0	1	2	3	4	5	6	7	8
ABSOLUTE	HIGH	MODERATE	LOW		LOW	MODERATE	HIGH	ABSOLUTE

For each route alternative, Project Team specialists assigned each criterion a score, based on an assessment of impacts as measured by the indicators and measures.

The detailed results of the weighting/scoring method are provided in the following tables.

RESULTS OF WEIGHTING-SCORING
North Route vs. South Route

FACTOR/Criteria	WEIGHT		North Route			South Route		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	7	61	56	5	44	40
1.2 Network Compatibility	7.36	8.00	7	52	56	5	37	40
1.3 Cost	6.51	4.00	3	20	12	2	13	8
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	0	0	0
2.2 Wildlife	5.37	2.50	2	11	5	0	0	0
2.3 Wetlands	4.87	6.25	2	10	13	0	0	0
2.4 Vegetation	3.56	6.25	2	7	13	0	0	0
2.5 Ground Water	5.97	3.75	2	12	8	2	12	8
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	1	9	15	2	18	30
3.2 Aesthetics	4.33	2.50	3	13	8	3	13	8
3.3 Noise	7.14	7.50	2	14	15	3	21	23
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	2	26	40	1	13	20
4.2 Commercial/Industrial	6.79	5.00	2	14	10	3	20	15
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	3	16	8	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5
TOTAL	100.00	100.00		292	277		228	208

RESULTS OF WEIGHTING-SCORING
B1 vs. B2 vs. B3

FACTOR/Criteria	WEIGHT		B1			B2			B3		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION											
1.1 Traffic Operations	8.74	8.00	6	52	48	7	61	56	7	61	56
1.2 Network Compatibility	7.36	8.00	5	37	40	6	44	48	7	52	56
1.3 Cost	6.51	4.00	1	7	4	3	20	12	3	20	12
2 NATURAL ENVIRONMENT											
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	2	7	10	2	7	10
2.2 Wildlife	5.37	2.50	1	5	3	2	11	5	2	11	5
2.3 Wetlands	4.87	6.25	0	0	0	3	15	19	2	10	13
2.4 Vegetation	3.56	6.25	2	7	13	3	11	19	2	7	13
2.5 Ground Water	5.97	3.75	2	12	8	3	18	11	3	18	11
2.6 Geology	2.27	1.25	4	9	5	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT											
3.1 Community Effects	9.01	15.00	2	18	30	1	9	15	2	18	30
3.2 Aesthetics	4.33	2.50	3	13	8	1	4	3	3	13	8
3.3 Noise	7.14	7.50	3	21	23	2	14	15	1	7	8
4 ECONOMIC ENVIRONMENT											
4.1 Agricultural	13.00	20.00	3	39	60	2	26	40	2	26	40
4.2 Commercial/Industrial	6.79	5.00	3	20	15	1	7	5	3	20	15
5 CULTURAL ENVIRONMENT											
5.1 Archaeological	5.19	2.50	3	16	8	2	10	5	1	5	3
5.2 Historical	6.16	2.50	2	12	5	2	12	5	2	12	5
TOTAL	100.00	100.00		276	277		278	272		296	288

RESULTS OF WEIGHTING-SCORING
B North vs. B South

FACTOR/Criteria	WEIGHT		B North			B South		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	5	44	40	5	44	40
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40
1.3 Cost	6.51	4.00	2	13	8	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	3	11	15	3	11	15
2.2 Wildlife	5.37	2.50	3	16	8	2	11	5
2.3 Wetlands	4.87	6.25	4	19	25	4	19	25
2.4 Vegetation	3.56	6.25	3	11	19	1	4	6
2.5 Ground Water	5.97	3.75	3	18	11	3	18	11
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	2	18	30	1	9	15
3.2 Aesthetics	4.33	2.50	2	9	5	3	13	8
3.3 Noise	7.14	7.50	2	14	15	2	14	15
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	3	39	60	3	39	60
4.2 Commercial/Industrial	6.79	5.00	2	14	10	3	20	15
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	3	16	8	3	16	8
5.2 Historical	6.16	2.50	2	12	5	3	18	8
TOTAL	100.00	100.00		299	303		302	287

RESULTS OF WEIGHTING-SCORING
D-E Connection With B

FACTOR/Criteria	WEIGHT		D2C/E1			D2D/E1			D2D/E2			D2E/E1			D2E/E2		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION																	
1.1 Traffic Operations	8.74	8.00	5	44	40	5	44	40	5	44	40	5	44	40	5	44	40
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40	5	37	40	5	37	40	5	37	40
1.3 Cost	6.51	4.00	2	13	8	2	13	8	3	20	12	2	13	8	3	20	12
2 NATURAL ENVIRONMENT																	
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	2	7	10	1	4	5	2	7	10	1	4	5
2.2 Wildlife	5.37	2.50	1	5	3	1	5	3	2	11	5	2	11	5	3	16	8
2.3 Wetlands	4.87	6.25	1	5	6	2	10	13	2	10	13	3	15	19	4	19	25
2.4 Vegetation	3.56	6.25	2	7	13	2	7	13	3	11	19	2	7	13	3	11	19
2.5 Ground Water	5.97	3.75	3	18	11	2	12	8	3	18	11	1	6	4	2	12	8
2.6 Geology	2.27	1.25	4	9	5	4	9	5	4	9	5	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT																	
3.1 Community Effects	9.01	15.00	2	18	30	2	18	30	1	9	15	2	18	30	1	9	15
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5	1	4	3	2	9	5	1	4	3
3.3 Noise	7.14	7.50	2	14	15	3	21	23	1	7	8	2	14	15	1	7	8
4 ECONOMIC ENVIRONMENT																	
4.1 Agricultural	13.00	20.00	1	13	20	2	26	40	1	13	20	1	13	20	1	13	20
4.2 Commercial/Industrial	6.79	5.00	4	27	20	3	20	15	3	20	15	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT																	
5.1 Archaeological	5.19	2.50	2	10	5	3	16	8	3	16	8	3	16	8	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5	2	12	5	2	12	5	2	12	5
TOTAL	100.00	100.00		249	236		267	263		244	222		258	246		260	238

RESULTS OF WEIGHTING-SCORING
C1 vs. C2

FACTOR/Criteria	WEIGHT		C1			C2		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	6	52	48	5	44	40
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40
1.3 Cost	6.51	4.00	3	20	12	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	1	4	5	3	11	15
2.2 Wildlife	5.37	2.50	1	5	3	1	5	3
2.3 Wetlands	4.87	6.25	1	5	6	1	5	6
2.4 Vegetation	3.56	6.25	1	4	6	2	7	13
2.5 Ground Water	5.97	3.75	3	18	11	2	12	8
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	3	27	45	3	27	45
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5
3.3 Noise	7.14	7.50	2	14	15	2	14	15
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	2	26	40	2	26	40
4.2 Commercial/Industrial	6.79	5.00	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	1	5	3	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5
TOTAL	100.00	100.00		274	269		281	278

RESULTS OF WEIGHTING-SCORING
D2A-E1 vs. D2D-E1

FACTOR/Criteria	WEIGHT		D2A\E1			D2D\E1		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	5	44	40	6	52	48
1.2 Network Compatibility	7.36	8.00	6	44	48	6	44	48
1.3 Cost	6.51	4.00	3	20	12	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	0	0	0	0	0	0
2.2 Wildlife	5.37	2.50	1	5	3	2	11	5
2.3 Wetlands	4.87	6.25	2	10	13	2	10	13
2.4 Vegetation	3.56	6.25	2	7	13	2	7	13
2.5 Ground Water	5.97	3.75	1	6	4	1	6	4
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	1	9	15	2	18	30
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5
3.3 Noise	7.14	7.50	2	14	15	2	14	15
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	1	13	20	1	13	20
4.2 Commercial/Industrial	6.79	5.00	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	1	5	3	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5
TOTAL	100.00	100.00		234	219		268	249

RESULTS OF WEIGHTING-SCORING
B1A vs. B1B

FACTOR/Criteria	WEIGHT		B1A			B1B		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	6	52	48	6	52	48
1.2 Network Compatibility	7.36	8.00	6	44	48	6	44	48
1.3 Cost	6.51	4.00	3	20	12	2	13	8
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	3	11	15	2	7	10
2.2 Wildlife	5.37	2.50	2	11	5	3	16	8
2.3 Wetlands	4.87	6.25	3	15	19	3	15	19
2.4 Vegetation	3.56	6.25	1	4	6	3	11	19
2.5 Ground Water	5.97	3.75	3	18	11	3	18	11
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	3	27	45	3	27	45
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5
3.3 Noise	7.14	7.50	2	14	15	2	14	15
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	2	26	40	2	26	40
4.2 Commercial/Industrial	6.79	5.00	3	20	15	3	20	15
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	3	16	8	2	10	5
5.2 Historical	6.16	2.50	3	18	8	3	18	8
TOTAL	100.00	100.00		314	304		311	308

**RESULTS OF WEIGHTING-SCORING
B3A VS. B3B**

FACTOR/Criteria	WEIGHT		B3A			B3B		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	5	44	40	7	61	56
1.2 Network Compatibility	7.36	8.00	6	44	48	7	52	56
1.3 Cost	6.51	4.00	3	20	12	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	2	7	10
2.2 Wildlife	5.37	2.50	3	16	8	2	11	5
2.3 Wetlands	4.87	6.25	2	10	13	3	15	19
2.4 Vegetation	3.56	6.25	3	11	19	3	11	19
2.5 Ground Water	5.97	3.75	2	12	8	2	12	8
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	1	9	15	2	18	30
3.2 Aesthetics	4.33	2.50	2	9	5	3	13	8
3.3 Noise	7.14	7.50	2	14	15	3	21	23
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	2	26	40	2	26	40
4.2 Commercial/Industrial	6.79	5.00	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	3	16	8	2	10	5
5.2 Historical	6.16	2.50	2	12	5	2	12	5
TOTAL	100.00	100.00		285	269		325	319

RESULTS OF WEIGHTING-SCORING
D1-E1 vs. D2A-E1 vs. D2B-E1

FACTOR/Criteria	WEIGHT		D1\E1			D2A\E1			D2B\E1		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION											
1.1 Traffic Operations	8.74	8.00	6	52	48	6	52	48	6	52	48
1.2 Network Compatibility	7.36	8.00	6	44	48	6	44	48	6	44	48
1.3 Cost	6.51	4.00	3	20	12	3	20	12	3	20	12
2 NATURAL ENVIRONMENT											
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	1	4	5	1	4	5
2.2 Wildlife	5.37	2.50	1	5	3	2	11	5	2	11	5
2.3 Wetlands	4.87	6.25	1	5	6	2	10	13	1	5	6
2.4 Vegetation	3.56	6.25	1	4	6	3	11	19	1	4	6
2.5 Ground Water	5.97	3.75	2	12	8	1	6	4	1	6	4
2.6 Geology	2.27	1.25	4	9	5	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT											
3.1 Community Effects	9.01	15.00	2	18	30	2	18	30	2	18	30
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5	2	9	5
3.3 Noise	7.14	7.50	2	14	15	3	21	23	2	14	15
4 ECONOMIC ENVIRONMENT											
4.1 Agricultural	13.00	20.00	1	13	20	1	13	20	1	13	20
4.2 Commercial/Industrial	6.79	5.00	4	27	4	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT											
5.1 Archaeological	5.19	2.50	3	16	8	2	10	5	1	5	3
5.2 Historical	6.16	2.50	2	12	5	2	12	5	2	12	5
TOTAL	100.00	100.00		267	232		277	266		253	237

RESULTS OF WEIGHTING-SCORING D-E Connection With C

FACTOR/Criteria	WEIGHT		D2C/E1			D2D/E1			D2D/E2			D2E/E1			D2E/E2		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION																	
1.1 Traffic Operations	8.74	8.00	5	44	40	6	52	48	6	52	48	5	44	40	5	44	40
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40	5	37	40	5	37	40	5	37	40
1.3 Cost	6.51	4.00	3	20	12	2	13	8	3	20	12	2	13	8	3	20	12
2 NATURAL ENVIRONMENT																	
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	2	7	10	1	4	5	2	7	10	1	4	5
2.2 Wildlife	5.37	2.50	1	5	3	1	5	3	2	11	5	2	11	5	3	16	8
2.3 Wetlands	4.87	6.25	1	5	6	2	10	13	2	10	13	3	15	19	4	19	25
2.4 Vegetation	3.56	6.25	2	7	13	2	7	13	3	11	19	2	7	13	3	11	19
2.5 Ground Water	5.97	3.75	2	12	8	2	12	8	3	18	11	1	6	4	2	12	8
2.6 Geology	2.27	1.25	4	9	5	4	9	5	4	9	5	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT																	
3.1 Community Effects	9.01	15.00	2	18	30	2	18	30	1	9	15	2	18	30	1	9	15
3.2 Aesthetics	4.33	2.50	2	9	5	2	9	5	1	4	3	2	9	5	1	4	3
3.3 Noise	7.14	7.50	2	14	15	3	21	23	1	7	8	2	14	15	1	7	8
4 ECONOMIC ENVIRONMENT																	
4.1 Agricultural	13.00	20.00	1	13	20	2	26	40	1	13	20	2	26	40	1	13	20
4.2 Commercial/Industrial	6.79	5.00	4	27	20	3	20	15	3	20	15	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT																	
5.1 Archaeological	5.19	2.50	2	10	5	3	16	8	3	16	8	3	16	8	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5	2	12	5	2	12	5	2	12	5
TOTAL	100.00	100.00		250	236		275	271		252	230		271	266		260	238

RESULTS OF WEIGHTING-SCORING
B1B vs. B1C

FACTOR/Criteria	WEIGHT		B1B			B1C		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	6	52	48	6	52	48
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40
1.3 Cost	6.51	4.00	3	20	12	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	3	11	15	3	11	15
2.2 Wildlife	5.37	2.50	3	16	8	3	16	8
2.3 Wetlands	4.87	6.25	3	15	19	4	19	25
2.4 Vegetation	3.56	6.25	3	11	19	3	11	19
2.5 Ground Water	5.97	3.75	3	18	11	3	18	11
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	3	27	45	1	9	15
3.2 Aesthetics	4.33	2.50	3	13	8	3	13	8
3.3 Noise	7.14	7.50	3	21	23	3	21	23
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	3	39	60	3	39	60
4.2 Commercial/Industrial	6.79	5.00	3	20	15	2	14	10
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	3	16	8	1	5	3
5.2 Historical	6.16	2.50	3	18	8	2	12	5
TOTAL	100.00	100.00		343	341		307	305

RESULTS OF WEIGHTING-SCORING
D2A North vs. D2A South

FACTOR/Criteria	WEIGHT		D2A North			D2A South		
	PUBLIC	PROJECT TEAM	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE	SCORE	PUBLIC WEIGHTED SCORE	PROJECT TEAM WEIGHTED SCORE
1 TRANSPORTATION								
1.1 Traffic Operations	8.74	8.00	5	44	40	5	44	40
1.2 Network Compatibility	7.36	8.00	5	37	40	5	37	40
1.3 Cost	6.51	4.00	3	20	12	3	20	12
2 NATURAL ENVIRONMENT								
2.1 Fisheries and Aquatic Habitat	3.73	5.00	2	7	10	3	11	15
2.2 Wildlife	5.37	2.50	3	16	8	2	11	5
2.3 Wetlands	4.87	6.25	3	15	19	2	10	13
2.4 Vegetation	3.56	6.25	3	11	19	3	11	19
2.5 Ground Water	5.97	3.75	3	18	11	3	18	11
2.6 Geology	2.27	1.25	4	9	5	4	9	5
3 SOCIAL ENVIRONMENT								
3.1 Community Effects	9.01	15.00	1	9	15	2	18	30
3.2 Aesthetics	4.33	2.50	2	9	5	3	13	8
3.3 Noise	7.14	7.50	2	14	15	2	14	15
4 ECONOMIC ENVIRONMENT								
4.1 Agricultural	13.00	20.00	1	13	20	1	13	20
4.2 Commercial/Industrial	6.79	5.00	4	27	20	4	27	20
5 CULTURAL ENVIRONMENT								
5.1 Archaeological	5.19	2.50	2	10	5	3	16	8
5.2 Historical	6.16	2.50	2	12	5	2	12	5
TOTAL	100.00	100.00		271	248		283	265

**APPENDIX 6.E TWINNING HIGHWAY 48
ASSESSMENT**

TRANSITION SECTION ASSESSMENT

Alternative	Description	Rationale	Property Impacts	Access Impacts	Natural Impacts	Assessment
#1 Widening without Barrier	Widen about existing centreline No median dividing directional roadways At-grade intersections and existing entrances remain.	Maintaining existing right-of-way reduces direct impacts to adjacent lands	No additional property required along Highway 48; Displacement and disruptions of properties in vicinity of Highway 12/48 intersection	No out-of-way travel; access maintained	No direct impacts outside existing right-of-way.	Base Case scenario No access restrictions No property or natural impacts
#2 Barrier with Intersection at Brock Rd 17	Widen about existing centreline 7 m median; 55m ROW Intersection at BR 17; other at-grade intersections and private entrances right in-right out.	Barrier improves safety by reducing potential for accidents involving cross-overs and left-turns to/from Highway 404.	Minor property taking required from both sides of right-of-way Highway 12/48 interchange. One residence displaced	Out-of-way travel impacts for land owners along Highway 48; 18 entrances and 3 intersections converted to right in-right out Max out-of-way travel = 15 km for 1 residence and Summer Breeze Trailer Park (can be reduced if 14th Conc. intersection not right-in right-out/use local roads).	2 ha of swamp (Port Bolster = 1.5 and Gibson Hill = 0.5) displaced due to widening of right-of-way Restrictions to small mammals crossing highway (MNR Concern)	Enhanced safety over Base Case Access restrictions (introduce out-of-way travel) Barrier restricts wildlife crossings Construction cost is 101% more than Base Case Best barrier option
#3 Barrier with Interchange at Brock Rd 17	Widen about existing centreline 7 m median; 55m ROW Turn-around interchange at BR 17 Other at-grade intersections and private entrances right in-right out.	Barrier improves safety by reducing potential for accidents involving cross-overs and left-turns to/from Highway 404 Interchange reduces out-of-way travel impacts compared to Alt. #2	Minor property taking required from both sides of right-of-way Additional property disruption at interchange Displacement and disruptions of properties in vicinity of Highway 12/48 interchange. One residence displaced	Out-of-way travel impacts for land owners along Highway 48; 18 entrances and 3 intersections converted to right in-right out Max out-of-way travel = 9 km for 1 residence and Summer Breeze Trailer Park (can be reduced if 14th Conc. intersection not right-in right-out/use local roads).	2 ha of swamp (Port Bolster = 1.5 and Gibson Hill = 0.5) displaced due to widening of right-of-way Restrictions to small mammals crossing highway (MNR Concern)	Enhanced safety over Base Case Access restrictions (introduce out-of-way travel) Wildlife crossing impacts Construction cost is 148% more than Base Case Interchange increases costs with low benefit to out-of-way travel; not recommended

TRANSITION SECTION ASSESSMENT

Alternative	Description	Rationale	Property Impacts	Access Impacts	Natural Impacts	Assessment
#4 Widening with grassed median - twin north side	15 m grassed median; 70m ROW Median flares to 30m at Intersection at BR 17 to provide turning refuge. Other at-grade intersections and private entrances right in-right out.	Median improves safety by separating directional lanes. Providing turning refuge at BR 17 intersection reduces potential for accidents with turning vehicles and provides a turn-around for local traffic.	Displacements, disruptions of properties on north side of Highway 48. Port Bolster Sand & Gravel and Summer Breeze Trailer Park displaced Additional disruptions of properties in vicinity of BR 17 intersection. Displacement and disruptions of properties in vicinity of Highway 12/48 interchange. One residence displaced	Out-of-way travel impacts for land owners along Highway 48: 18 entrances and 3 intersections converted to right in-right out Max out-of-way travel = 9 km for 1 residence and Summer Breeze Trailer Park (can be reduced if 14th Conc. intersection not right-in right-out / use local roads. Could provide emergency vehicles turnarounds	3.5 ha of swamp (Port Bolster =2.5 and Gibson Hill =1) displaced due to widening of right-of-way	Enhanced safety over Base Case Access restrictions (introduce out-of-way travel) Construction cost is 57% more than Base Case Property impacts are greater than 'switching' option; therefore higher cost; not recommended Impacts to swamps not significant No wildlife crossing restrictions
#5 Widening with grassed median - twin south side	15 m grassed median; 70m ROW Median flares to 30m at Intersection at BR 17 to provide turning refuge. Other at-grade intersections and private entrances right in-right out.	Median improves safety by separating directional lanes. Providing turning refuge at BR 17 intersection reduces potential for accidents with turning vehicles and provides a turn-around for local traffic.	Four residences and four agricultural operations displaced along south side of Highway 48. Additional disruptions of properties in vicinity of BR 17 intersection. Displacement and disruptions of properties in vicinity of Highway 12/48 interchange. One residence displaced	Out-of-way travel impacts for land owners along Highway 48: 18 entrances and 3 intersections converted to right in-right out Max out-of-way travel = 9 km for 1 residence and Summer Breeze Trailer Park (can be reduced if 14th Conc. intersection not right-in right-out / use local roads. Could provide emergency vehicles turnarounds	3.5 ha of swamp (Port Bolster =2.5 and Gibson Hill =1) displaced due to widening of right-of-way	Enhanced safety over Base Case Access restrictions (introduce out-of-way travel) Construction cost is 87% more than Base Case Property impacts are greater than 'switching' and 'north' options; therefore higher cost; not recommended Impacts to swamps not significant No wildlife crossing restrictions

Alternative	Description	Rationale	Property Impacts	Access Impacts	Natural Impacts	Assessment
#6 Widening with grassed median - switch from south to north side	15 m grassed median; 70m ROW Median flares to 30m at Intersection at BR 17 to provide turning refuge. Other at-grade intersections and private entrances right in-right out.	Median improves safety by separating directional lanes. Providing turning refuge at BR 17 intersection reduces potential for accidents with turning vehicles and provides a turn-around for local traffic. Switching twinning reduces property impacts.	Property taking from south side of existing Highway 48 ROW between DRR23 and First Line, and from north side between First Line and Highway 12 1 residence displaced along Highway 48 Displacement and disruptions of properties in vicinity of Highway 12/48 interchange. One residence displaced.	Out-of-way travel impacts for land owners along Highway 48: 18 entrances and 3 intersections converted to right in-right out Max out-of-way travel = 9 km for 1 residence and Summer Breeze Trailer Park (can be reduced if 14th Conc. intersection not right-in right-out / use local roads. Could provide emergency vehicles turnarounds	3.5 ha of swamp (Port Bolster =2.5 and Gibson Hill =1) displaced due to widening of right-of-way	Enhanced safety over Base Case Access restrictions (introduce out-of-way travel) Construction cost is 52% more than Base Case Best rural median option Impacts to swamps not significant No wildlife crossing restrictions
#7 Alternative D2D Best freeway option (as identified during route evaluation)	30 m grassed median; 100 m ROW Controlled access for Highway 404 Service roads along north side as required; Highway 48 remains as service road on south side No interchange between DRR 23 and Hwy. 12; Interchange at Highway 12.	Controlled access designation improves safety by separating directional lanes and eliminating direct access to the highway for turning / local traffic. Service roads provided to provide access, thereby reducing property impacts.	Displacements, disruptions of properties on north side of Highway 48: 4 residences and 1 agricultural operation displaced. Port Bolster Sand & Gravel and Summer Breeze Trailer Park displaced. Displacement and disruptions of properties in vicinity of Highway 12/48 interchange. One residence displaced	Out-of-way travel impacts for landowners on north side of Highway 48. Maximum out-of-way travel = 5 km Could provide emergency vehicles turnarounds	9 ha of swamp (Port Bolster =6 and Gibson Hill =3) displaced due to widening of right-of-way	Enhanced safety over Base Case and median options Access restrictions on north side(introduce out-of-way travel) Construction cost is 414% more than Base Case Property impacts are greater than other median options therefore higher cost; Greater impacts to swamps than median options and Base Case No wildlife crossing restrictions

CONCLUSION :

THE WIDENING WITH GRASSED MEDIAN AND SWITCHING FROM NORTH SIDE TO SOUTH SIDE IS THE PREFERRED DESIGN FOR THE TRANSITION SECTION. THIS ALTERNATIVE ENHANCES SAFETY OVER THE BASE CASE, HAS THE LOWEST PROPERTY IMPACTS, LOW NATURAL IMPACTS AND THE LOWEST COSTS OF THE OTHER WIDENING ALTERNATIVES.

CONCLUSION : THE WIDENING WITH GRASSED MEDIAN AND SWITCHING FROM NORTH SIDE TO SOUTH SIDE IS THE PREFERRED DESIGN FOR THE TRANSITION SECTION. THIS ALTERNATIVE ENHANCES SAFETY OVER THE BASE CASE, HAS THE LOWEST PROPERTY IMPACTS, LOW NATURAL IMPACTS AND THE LOWEST COSTS OF THE OTHER WIDENING ALTERNATIVES.

APPENDIX 7 SELECT CORRESPONDENCE

Appendix 7.A External Team

Appendix 7.B Municipal Team

APPENDIX 7.A EXTERNAL TEAM

MINUTES OF MEETING

DATE: March 18, 1997 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: MNR Offices - Aurora

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

C. Tschirhart	-	MNR
G. Hooper	-	MNR
I. Buchanan	-	MNR
S. Jacobs	-	MTO
H. Pearson	-	MTO
D. Leadbeater	-	GLL
C. Ricketts	-	CSA
L. Kozachuk	-	CSA
M. Bricks	-	CSA

PURPOSE: Review of the Technically Preferred Route

ACTION BY

The purpose of this meeting was to review MNR's comments on the Technically Preferred Route based on the comments received in their letter dated March 11, 1997. This letter outlined comments on both Principles of Design (Mitigation) and Areas of Concerns (Avoidance). The focus of this meeting was placed on the Areas of Concerns.

C. Ricketts noted that, since the last meeting, MTO had received digital mapping for the Technically Preferred Route and Cole, Sherman has been developing a conceptual design for the recommended route. This mapping was flown in April of 1996 at a scale of 1:2,000. MNR requested that MTO confirm the date in which this mapping was flown and requested additional information on how the information (primarily vegetation areas and wetlands) were interpreted. S. Jacobs agreed to forward this information to MNR.

MTO

1. Areas of Concern

MNR identified 12 areas of concern in their March 11, 1997 letter. These areas were reviewed by the Project Team. Given that some of the areas were in close

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proximity to each other, the Project Team combined the areas into 8 distinct areas for geometric reasons.

The attached charts were distributed at the meeting and summarize the rationale for refinements.

1 a. East Gwillimbury Con 3 Lots 13-14 and 18-19

These areas include a small woodland north of Doane Road and an unevaluated wetland south of Doane Road. MNR suggested that the alignment be moved east to avoid these features.

After reviewing these comments, the Project Team concluded that this refinement could not be made primarily because the feature south of Doane Road extends all the way to Woodbine Avenue. The design principles on this stretch of the alignment was to move the alignment back to mid-concession as soon as possible to reduce impacts to the farming operations north of Doane Road.

The alignment of Highway 404 passes between the core areas of the two wooded areas. It was noted that the Town of East Gwillimbury is in the process of developing a Secondary Plan for Queensville. This plan proposes to re designate all the land south of Queensville Sideroad to residential, institutional and commercial/industrial. In this Plan, the alignment for Highway 404 is shown at roughly the same distance from Woodbine Avenue as it exists at Mount Albert Road. If this Plan is approved by the Town and Province the alignment of the highway will be moved east in accordance with the Secondary Plan. This will leave a larger block of forest and wetland intact south of Doane Road and avoid the feature north of Doane Road. It was further noted that this shift could not be justified prior to the approval of the Secondary Plan because the social and agricultural impacts (associated with the shift) are greater than the natural impacts for the existing alignment.

1 b. East Gwillimbury Con 3 Lots 27-30 and 18-19

This area is a woodland feature identified as a "core area" in the EGNHS. On reviewing this comment, the alignment was shifted to reduce the impact to this feature.

1 c. East Gwillimbury Con 3 Lots 34-35 Georgina Con 4 Lots 1-2 and 7-9

These areas include a woodland south of Ravenshoe Road, the Maskinonge River Wetland north of Ravenshoe Road and the Maskinonge River Valley north of Glenwoods Road. These areas were examined all together because of the tight geometrics further complicated by the need for interchanges at Ravenshoe Road and Pollock Road.

Impacts to the woodlot south of Ravenshoe Road and the Maskinonge River Wetland could not be avoided because of the need for an interchange and the required separation distance from existing roads to accommodate the access ramps. Impacts to these features were reduced by locating the alignment as close as physically possible to Woodbine Avenue in the vicinity of Ravenshoe Road.

MNR questioned why the alignment could not be placed on the west side of Woodbine Avenue. This option was considered during the evaluation of route alternatives (Alternative B1C) but eliminated because of the impacts to the Keswick Secondary Plan. An alignment in this area would displace a large portion of the Keswick South Downtown Area affecting the planned approved residential and commercial development and approved location of Keswick's two new High Schools (Public and Separate Schools).

A crossing of the Maskinonge River cannot be avoided. As noted by MNR, the river will be spanned and the alignment has been refined to reduce impacts to valley.

Even with these refinements MNR still would like to see the alignment pass through the north-west quadrant of Woodbine Avenue and Ravenshoe Road, rather than the north-east quadrant. MTO reiterated that the north-west quadrant will not be reconsidered due to the approved Secondary Plan.

1 d. Georgina Con 4 Lots 12-15 (Sod Swamp)

The alignment runs along the border between the wetland and the adjacent wooded area. Refinements in this area were considered and not implemented because of social and agricultural impacts. This area of Georgina has been designated as a Provincial Significant Agricultural Policy Area by OMAFRA, the Region, and the Town. As such these agricultural uses are considered more significant than agricultural uses in areas not under this designation. To avoid Sod Swamp, an Orchard (Specialty Crop) would be displaced and the economic viability for farms north of Old Homestead Road will be severely impacted. These impacts were determined to be more significant than the impacts to Sod Swamp.

Notwithstanding these arguments, MNR reiterated their position that Sod Swamp was a non-renewable resource and should be given more importance than the surrounding agricultural uses. MTO will review MNR's and OMAFRA's policy position before finalizing their position.

MTO

1 e. Georgina Con 7 Lot 20 (Black River Crossing)

The alignment has been refined to enable a span of the River and the Floodplain.

1 f. Georgina Con 6 Lots 4-12 (Vachell Swamp)

The alignment in this area was shifted north to minimize impacts to the swamp. This shift results in the displacement of two residential units along Highway 48 and a high value farm, but maintained the connection of the swamp and marsh and reduces habitat loss. The alignment returns to the original alignment just east of the swamp to minimize impacts to the agricultural operations east of the swamp and runs along the border of the farm fields and woodlots. This trade-off was made primarily due to the significance of the Vachell Swamp and because only one farm was displaced (in an area not designated as an agricultural policy area by OMAFRA). MNR agreed with the shift, but requested that the alignment stay on the northern shift further easterly than shown. MTO noted that the shift avoided the main contiguous section of the swamp, the return back to the original alignment was necessary to maintain the economic viability of the farms to the east of the swamp.

1g. Georgina Con 6 Lots 17-20

This area is a forested area and wetland which connects the Morning Glory Swamp to the Zephyr Wetland Complex. The alignment was shifted to minimize direct impacts. The issue of wildlife crossings was discussed as part of the design principles portion of the meeting.

1h. Brock DRR 23 to Highway 12

No alignment concerns were identified on this section, but MNR identified the need for a wildlife crossing. This issue was discussed as part of the design principles portion of the meeting.

Conclusion

MNR agreed that the technically preferred route was the best of all the alternatives considered as part of the evaluation. MNR still has some concerns with the technically preferred route. Some of these concerns have been resolved as a result of the refinements discussed at this meeting. Concerns still exist in areas that refinements were not implemented but the project team has concluded that the impacts which would be realized to other components of the environment (social and economic) as a result of a shift were more significant than the natural environment impacts most notably in the areas referred to as 1c and 1d above.

2. Principles of Design

Various issues were discussed as part of principles of design. In general it was agreed that the EA Report should identify the impacts associated with the Technically Preferred Route, the proposed methods of mitigation and a discussion of the net effects after mitigation.

When defining the methods of mitigation, MNR requested that the Project Team identify the location, function and a ballpark cost of the proposed mitigation measure. It was agreed that because this is a conceptual design study, the technical details could be developed during preliminary or detail design but the EA Report should commit to the mitigation measures or clearly establish a process to ensure further consultation to discuss mitigation at latter stages of design.

MNR's concerns were related primarily to fishery habitat impacts and wildlife movements. The Project Team will assess the warrants for mitigation and present further documentation to MNR. This will also be included in the EA Report.

Submitted By:


Mike Bricks

MB:cc

cc: Those Present

HIGHWAY 404 EXTENSION ENVIRONMENTAL ASSESSMENT SUMMARY OF ASSESSMENT OF PROPOSED TECHNICALLY PREFERRED ROUTE REFINEMENTS		
Site/Feature	MNR Recommendation	Refined/Not Refined
East Gwillimbury Con 3 Lots 13-14 and Lots 18-19 Woodland and unevaluated wetland south of Doane Road; Woodland feature north of Doane Road	Move route out of features and provide corridor linkages to Black River system as appropriate	NOT REFINED Property Impacts/Geometry constrain opportunities for refinements North feature may be avoided with realignment due to Queensville Secondary Plan.
East Gwillimbury Con 3 Lots 27-30 Woodland	Move to avoid feature.	REFINED Alignment refined to reduce impacts
East Gwillimbury Con 3 Lots 34-35 Georgina Con 4 Lots 1-2 and 7-9 Woodland south of Ravenshoe Road, Maskinonge River Wetland north of Ravenshoe Road and Maskinonge River Valley north of Glenwoods Road	Avoid woodland and Maskinonge River Wetland; Span Maskinonge River and avoid river valley and floodplain.	REFINED Alignment refined to reduce impacts to Maskinonge River Valley; Property Impacts/Geometry constrain opportunities for further refinement.
Georgina Con 4 Lots 13-15 Sod Swamp	Move to avoid feature.	NOT REFINED Agricultural Impacts constrain opportunities for refinement.
Georgina Con 7 Lot 20 Black River Crossing	Span valley and floodplain	REFINED Alignment refined to enable span of river and floodplain.
Georgina Con 6 Lot 4-12 Vachell Swamp	Move to avoid feature	REFINED Alignment refined to reduce impacts.
Georgina Con 6 Lots 17-20 Forested area and wetland tributary	Move to reduce woodland impacts.	REFINED Alignment refined to reduce impacts.
Brock DRR 23 to Hwy 12 Port Bolster and Gibson Hill Wetlands	No refinement necessary, but provide corridor linkages.	N/A

East Gwillimbury Con 3, Lots 13-14

MNR Concerns	Proposed route bisects a woodland which also contains unevaluated wetland; Headwaters of Harrison Creek; Core natural feature of QNHS, YRRGS, EGNHS.
MNR Recommendation	Move route east of feature and provide wildlife corridor linkage to Black River system.
Other features	The area around this woodlot is agricultural and rural residential. Woodbine Avenue runs along the east edge of the feature, with Doane Road situated north of the feature.
Relocation Disadvantages	Relocating to the east to avoid the feature: - residential displacements, agricultural displacements over long section of route (beyond localised area of feature). - requires crossing Woodbine Avenue twice (additional structures); Relocating east to impact east edge of feature: - residential displacements (beyond localised area of feature), agricultural operation displacements (beyond localised area of feature); - additional engineering at Doane Road/ Woodbine intersection.
	Realignment due to Queensville Plan will not significantly change impacts

East Gwillimbury Con 3, Lots 18-19

MNR Concerns	Impacts to woodlot; Supporting area in EGNHS
MNR Recommendation	Move (west) out of feature.
Other features	The area around this woodlot is primarily agricultural. Queensville Sideroad situated north of the feature.
Relocation Disadvantages	Relocating to the west to avoid the feature: - significantly increases construction costs of Queensville interchange; - likely to increase residential displacement. Relocating east to avoid feature: - residential displacements (beyond localised area of feature), agricultural operation displacements (beyond localised area of feature); - additional engineering at Doane Road/ Woodbine intersection.
	Realignment due to Queensville Plan will avoid this feature

East Gwillimbury Con 3, Lots 27-30

MNR Concerns	Impacts to woodland feature; Core area of EGNHS, noted in YRRGS
MNR Recommendation	Move to avoid feature.
Other features	The area around this woodlot is primarily agricultural. Boag Road situated north of the feature.
Relocation Disadvantages	Relocating to the west to avoid the feature: - significantly increases impacts to agricultural operations; Relocating east to avoid feature: - agricultural displacements with possible agricultural operation displacements - additional engineering at Highway 404/ Woodbine Avenue interchange.

East Gwillimbury Con 3, Lots 34-35

MNR Concerns	Impacts to woodland feature;
MNR Recommendation	Move northwest to avoid feature.
Other features	The woodlot is bounded by Woodbine Ave. on west and Ravenshoe Rd. on north. Northwest quadrant of Woodbine/Ravenshoe is inside South Keswick Secondary Plan.
Relocation Disadvantages	Proposed interchange at south end of Keswick requires adequate spacing from Woodbine/Ravenshoe intersection

Georgina Con 4, Lots 1-2

MNR Concerns	Impacts to Maskinonge River Wetland and adjacent uplands; Part of YRRGS and GNFGS
MNR Recommendation	Move west to avoid feature and uplands.
Other features	The woodlot is bounded by Woodbine Ave. on west and Ravenshoe Rd. on south. Northwest quadrant of Woodbine/Ravenshoe is inside South Keswick Secondary Plan.
Relocation Disadvantages	Proposed interchange at south end of Keswick requires adequate spacing from Woodbine/Ravenshoe intersection

Georgina Con 4, Lots 7-9

MNR Concerns	Impacts to floodplain and valley wall of Maskinonge River ; Highly sensitive wetland and forest valley system; Part of YRRGS and GNFGS
MNR Recommendation	Move east to avoid floodplain and wooded valley; Span Maskinonge with a bridge.
Other features	The surrounding area is primarily agricultural.
Relocation Disadvantages	Relocating highway easterly increases agricultural impacts.

Georgina Con 6, Lots 13-15

MNR Concerns	Impacts to Sod Swamp ; Wetland and woodlot feature are part of YRRGS and GNFGS
MNR Recommendation	Move north and west to avoid feature.
Other features	The surrounding area is primarily agricultural; a specialty crop operation (orchard) is situated immediately north and west of feature.
Relocation Disadvantages	Relocating highway north and west increases agricultural impacts and may result in agricultural operation displacements over extended area (beyond localised area of feature)

Georgina Black River Crossing

MNR Concerns	Impacts to Black River and Floodplain ;
MNR Recommendation	Entire floodplain should be spanned.
Other features	The surrounding area is primarily agricultural.
Spanning Disadvantages	
	Crossing located at narrows in floodplain to facilitate spanning.

Georgina Con 6 Lots 4-12

MNR Concerns	Impacts to Vachell Swamp;
MNR Recommendation	Highway should be moved north out of the feature
Other features	The surrounding area is agricultural and rural residential.
Relocation Disadvantages	Relocating north increases agricultural impacts (including a high value operation) and impacts to residences (noise).

Georgina Con 6 Lots 17-18

MNR Concerns	Impacts to forested area and wetland tributary of Morning Glory Swamp; corridor linkage between Morning Glory and Zephyr-Egypt Wetland and Lower Pefferlaw Brook Wetland; Area is potential Significant Wildlife Habitat under Planning Policy Area; Feature part of YRRGS and GNFGS
MNR Recommendation	Highway should span feature to provide for wildlife movement across highway.
Other features	The wetland is bordered by Weir's Road on the east.
Spanning Disadvantages	Spanning feature and Weir's Road would increase costs, and increase 'footprint' of highway through the feature.
	Currently, Weir's Road is proposed to cross over Highway 404

Georgina Con 6 Lots 19-20

MNR Concerns	Impacts to forested area and wetland tributary of Morning Glory Swamp; woodland fragmentation impacts.
MNR Recommendation	Highway should move north to reduce fragmentation impacts.
Other features	The area is primarily agricultural.
Relocation Disadvantages	Relocating northward increases agricultural impacts.
	The alignment has been refined further north in this area.

MINUTES OF MEETING

DATE: October 25, 1996 **TIME:** 10:00 a.m.

OUR REF.: 6891

LOCATION: MNR - Maple

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

C. Tschirhart	-	MNR
G. Hooper	-	MNR
T. Rance	-	MNR
I. Buchanan	-	MNR
H. Pearson	-	MTO
D. Martin-Downs	-	Gartner Lee
D. Hoy	-	Gartner Lee
C. Ricketts	-	CSA
M. Bricks	-	CSA
L. Kozachuk	-	CSA

PURPOSE: Presentation of the Technically Preferred Route

1. Technically Preferred Route

C. Ricketts summarized the process followed to select the preferred route, including the generation of corridors which avoided large, contiguous wetlands in central study area, and the generation of route alternatives within corridors which sought to reduce impacts to all areas of the environment.

The Technically Preferred Route is the extension of Highway 404 between Davis Drive and Durham Road 23 along the northernmost alignment in the study area (see attached). Between Durham Road 23 and Highway 12, Highway 48 will be widened to four lanes as a transition between the new highway and existing Highway 12.

No improvements are proposed for the Highway 12/48 corridor as part of this study. A separate study by MTO is looking at short- to mid-term improvements.

A summary package outlining the evaluation of the route segments and the proposed recommendations was distributed to MNR. Other materials available for review were discussed. The summary evaluation tables, the Natural Environment Final Technical Paper and evaluation decision rules will be forwarded to MNR.

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COLE, SHERMAN & ASSOCIATES LTD.

75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 Δ Tel: (905) 882-4401 Δ Fax: (905) 882-4399

Internet: colesher@idirect.com

2. Comments from MNR

The preferred route is being presented to councils, ministries, agencies and the public to obtain comments on the route location and identify possible refinements. MTO is proposing to submit the EA report to MOEE in mid-1997. **A timeline indicating when comments on the remaining work phases are required will be provided to MNR (see attached).**

At this stage of the study, MTO is seeking comments with respect to the selection of the preferred route. However, comments on mitigation of impacts on a site specific basis will be required in the near future (early 1997).

It was noted that the Technically Preferred Route has some "red" impacts, i.e. areas MNR had previously identified as being of concern with respect to highway impacts. It was agreed that Cole, Sherman will provide MNR with 1:10 000 aerial photo mosaics indicating the location of the preferred route for MNR to review.

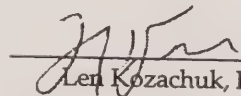
3. Outstanding Field Work

The proposed locations for fisheries habitat assessment were outlined by Gartner Lee (see attached). MNR agreed that the proposed plan was appropriate.

4. Mitigation

The level of detail in terms of mitigation proposed and future work commitments was also discussed. It was agreed that, with a twenty-year-plus timeline for the construction of the majority of the highway extension, it would be appropriate to identify generic details of proposed mitigation for principles and commitments to further consultation with MNR, rather than specific areas of natural environment impact. Discussions with MNR on specific details of proposed mitigation for each feature impacted will be reserved until the detail design stage.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs - MTO
H. Pearson - MTO
C. Tschirhart - MNR
D. Martin-Downs - GLL

PROPOSED TIMELINE FOR COMPLETION OF
THE HIGHWAY 404 EXTENSION
ENVIRONMENTAL ASSESSMENT REPORT

Time Period	Study Phase	Comments Required On
October, November 1996	Present Preferred Route	Route refinements, Evaluation, Technically Preferred Route
December 1996 to March 1997	Refine Preferred Route, Complete draft EA Report	Site Specific Impacts of Preferred Route, Proposed Mitigation of Impacts, Principles and Commitments to future work.
April, May 1997	Pre-submission Consultation	Draft EA Report
June, July 1997	Finalise EA Report	
August 1997	Submit Final EA Report to MOEE	

MINUTES OF MEETING

DATE: September 19, 1995 **TIME:** 1:30 pm
OUR REF.: 6891
LOCATION: MNR - Maple District
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT:
Chris Tschirhart - MNR, District Planner
Ken Elliot - MNR, Durham Forester
Kevin Reese - MNR, York North Forester
Glen Hooper - MNR, District Ecologist
Rhonda Gibbon - MNR, Planner
Heather Pearson - MTO, Environmental Planner
Deborah Martin-Downs - GLL, Fisheries Biologist
Dale Hoy - GLL, Biologist
Chris Ricketts - CSA, Project Manager
Len Kozachuk - CSA, Project Engineer
Mike Bricks - CSA, Environmental Planner
PURPOSE: MNR Comments on Route Refinements

1. BACKGROUND TO ROUTE GENERATION

Action By:

L. Kozachuk briefly provided an overview of the route generation process (which has been reviewed at previous meetings). To generate routes a two stage process was used:

Stage 1: Opportunity Areas (Reviewed at May 31, 1994 meeting)

Utilizing secondary source data collected from the Ministry of Natural Resources and Lake Simcoe Region Conservation Authority, a natural constraints map (1:50,000 scale) was developed. The level of detail on this map was consistent throughout the study area.

The natural features were then analyzed, taking into consideration wetlands, large forested tracts, rivers and fish communities, and geologic conditions. Large and small features were linked together on the surface to create a 'greenland unit' following a set of criteria similar to those used in the York Region official plan Greenlands mapping.

Once the greenland units were identified, opportunity areas for possible highway crossings were generated. Typically, opportunity areas included:

- Areas with existing disturbances such as a road, hydro or rail crossing;
- Areas where the unit is narrow;

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Action By:

- Areas near the fringe of the unit.

The opportunity areas were then superimposed on a map of built-up areas. Potential 'corridors' were developed which avoided the built-up areas and either avoided natural features or crossed the features within the opportunity areas. The corridors were left as wide as possible, typically 1 to 2 kilometres in width.

Stage 2: Route Generation (Reviewed at February 28, 1995 meeting with MNR, comments received from NR at May 17, 1995 meeting)

A set of Route Design Objectives were formulated to assist route design. These objectives included natural, social, economic and cultural criteria.

For the corridors identified in Stage 1, more detailed natural, social, economic and cultural information was collected from additional sources and field investigation. This information was used to refine the corridors.

These routes were presented to external ministries, local councils, and the public in the spring of 1995. From these consultation events a number of refinements were suggested. A set of workshops were held with members of the public in 1995 to review the route refinements that were being considered to determine if any other possible route refinements should be investigated.

MNR, at the May 17th meeting, provided their comments/concerns on 1:10,000 scale OBM's. MNR used a color coding system to provide comments:

- Green areas represented no major MNR concerns.
- Yellow areas represented concerns which can likely be mitigated.
- Red areas represented major concerns where alternatives should be investigated, if feasible. Where possible, MNR provided comments on refinements that should be considered to minimize these major concerns. These comments were noted by asterisks. Red areas without an asterisk noted areas where MNR could not identify any possible refinement. It was noted that if the preferred alternative crossed these areas MNR would have serious concerns.

MTO noted that this information will assist in the route refinement stage, but stated it may not be possible to select the route which minimizes impacts to the natural environment because this study is being conducted to meet the requirements of the Environmental Assessment Act which requires the evaluation to consider integrated natural, social, economic and cultural impacts.

MNR understands that the comprehensive requirements of the Environmental Assessment Act may result in the selection of a route which does not minimize impacts to the natural environment.

MNR questioned why a route was not considered north of alternative B3B in the vicinity of Roaches Point. The project team stated that no route was considered in that vicinity because it would result in out-of-way travel.

Action By:

2. REVIEW OF ROUTE REFINEMENTS AND MNR "RED" AREAS

A chart which described the MNR red areas and the rationale for why route refinements were or were not made to avoid these features was provided by the project team.

Evaluation charts outlining the 13 route refinements that were suggested by external ministries, local councils and the public during consultation activities in the spring of 1995 were also provided.

MNR had concerns about the evaluation of the route refinements, specifically how natural environment impacts were weighted against agricultural impacts or the natural environment impacts of the original alignment. The project team responded that each evaluation was conducted on a qualitative basis for each specific location. Examples of how this evaluation was conducted were discussed.

D. Hoy outlined the criteria that was used to determine the relative significance of natural environment impacts. A copy of this criteria was submitted for MNR review and comment. (This criteria was applied to both the route refinement evaluation and the review of MNR red areas).

MNR questioned how agricultural impacts could outweigh natural environment impacts, when policies are in place under the Planning Act to protect these features (Wetlands Policy Statement, Natural Heritage, Environmental Protection and Hazard Policies). The project team noted that provincial policies, under the Planning Act, also exist which address provincial interest to manage urban growth (Community Development and Infrastructure Policies) and protect agricultural lands (Agricultural Land Policies).

The project team recognized MNR's mandate with regards to natural features preservation but MTO is required under the Environmental Assessment Act to consider all aspects of the environment by conducting an evaluation of the advantages and disadvantages to the environment (broadly defined by the Act to include natural, socio-economic and cultural conditions).

3. PRINCIPLES OF MITIGATION

General mitigation principles were discussed for the purpose of route selection (copy attached). Once a preferred route has been selected, the details of mitigation will be discussed.

4. CONCEPT OF GENERATING AN "ENVIRONMENTALLY BENIGN ROUTE"

G. Hooper requested that the project team generate a natural environmentally benign route in consultation with MNR. This would assist MNR in better understanding the rationale for trade-offs (primarily natural vs. agricultural) that will be made to select a preferred route.

The project team once again recognized MNR's mandate with regards to natural features preservation but noted that MTO is required under the

Action By:

Environment Assessment Act to consider all aspects of the environment by conducting an evaluation of the advantages and disadvantages to the environment (broadly defined by the Act to include natural, socio-economic and cultural conditions).

It was further noted that the generation of an environmentally benign route alternative could undermine the credibility of the route generation process which was designed to meet the broader mandate of the Environmental Assessment Act and could result in requests to generate an agriculturally benign alternative or a socially benign alternative. None of these alternatives would necessarily aid in the selection of an overall preferred route. Concern was also expressed that this approach would set up a confrontation between stakeholders rather than constructive dialogue.

5. ACTION ITEMS/FURTHER WORK

The 1:10,000 display boards were loaned to MNR for their review. They will be held in Chris Tschirhart's office. CSA can contact either Linda, Doreen or Audrey at MNR if the boards are needed.

The project team will forward a copy of the general principles of mitigation for MNR review (copy attached).

MNR will review the chart which described the MNR red areas and the rationale for why route refinements were or were not made to avoid these features. Comments on the rationale and additional comments with respect to the assessment of impact will be provided by MNR no later than October 13, 1995.

MNR

MNR will review the chart which described the route refinement evaluation and provide comments to MTO (i.e. was there something missed that should have been considered) no later than October 13, 1995.

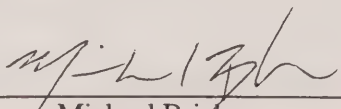
MNR

Once MNR comments have been received the project team will finalize the location of route alternatives, notify the public of these refinements, complete the assessment of impacts, and conduct the evaluation of route alternatives.

Once a preferred route has been selected a meeting will be held with MNR to review the evaluation and discuss specific mitigation measures. This meeting will be held (likely late 1995) prior to the next set of Public Information Centres tentatively scheduled for February 1996.

An additional meeting will be held during the preliminary design stage (spring 1996) to review mitigation measures.

Submitted By:


Michael Bricks

MB:sn

cc: Those Present
S. Jacobs - MTO

MINUTES OF MEETING

DATE: May 17, 1995 **TIME:** 1:00 pm
OUR REF.: 6891
LOCATION: MNR - Maple District
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT: Chris Tschirhart - MNR, District Planner
Ken Elliot - MNR, Durham Forester
Ian Buchannan - MNR, York North Biologist
Theresa Cunningham - MNR, Durham Biologist
Kevin Resse - MNR, York North Forester
Glen Hooper - MNR, District Ecologist
Yannic Fontain - MNR, Planner
Steve Jacobs - MTO, Project Manager
Heather Pearson - MTO, Environmental Planner
Rinaldo Rossi - MTO, Project Engineer
Deborah Martin-Downs - GLL, Fisheries Biologist
Dale Hoy - GLL, Biologist
Chris Ricketts - CSA, Project Manager
Len Kozachuk - CSA, Project Engineer
Mike Bricks - CSA, Environmental Planner
PURPOSE: MNR Comments on Route Alternatives

Action By:**1. PROJECT UPDATE**

S. Jacobs briefly provided MNR staff with an update of the project. The route alternatives that MNR reviewed were recently (March/April, 1995) presented to local councils and the public. The purpose of these presentations was to solicit comments on the route alternatives to determine if any refinements should be made prior to route analysis and evaluation.

The Project Team is currently responding to comments received at these presentations and is in the process of setting up workshops for interested area residents. The primary purpose of these workshops is to further identify possible route refinements prior to route analysis and evaluation.

A preferred alternative is expected to be selected by fall 1995. The schedule is as follows:

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

Analyze and Evaluate Routes
PIC #4 (Present Preferred Route)
Preliminary Design
PIC #5 (Present Preliminary Design)
Report

May - September, 1995
October/November, 1995
September - March, 1996
April, 1996
June, 1996

Action By:

S. Jacobs noted that MTO is proposing to conduct additional work on the natural environment to assist in the assessment of route alternatives. This work is required because of deficiencies in secondary source information (i.e., age of information, method of data collection, reliability of information, and uniformity of the quality of available information). Additional work will include a herpetofaunal survey, breeding bird survey and vegetation survey for all route alternatives.

G. Hooper questioned if the fall date for the selection of a preferred alternative was realistic and if some fall field work (i.e., migratory bird information, deer wintering area, etc.) was also required. D. Martin-Downs stated that the spring and summer field work (which will augment the information collected from MNR, area naturalist groups, and study area residents) would identify indicator species and habitats.

2. MNR INFORMATION NEEDS

MNR would like a copy of the route alternatives on a 1:50,000 N.T.S. map with the York Region Greenlands System. CSA will prepare this map a forward it to MNR.

CSA

The Initial Technical Paper for the Natural Environment was provided to MNR for review and comment.

MNR

A copy of the display boards used at Public Information Centres to explain the route generation process (including corridor generation criteria and route generation criteria) was provided to MNR.

A copy of the proposed natural environment evaluation criteria was provided for MNR review and comment

MNR.

3. MNR's COMMENTS ON ROUTE ALTERNATIVES

MNR understands that MTO has to consider more than the natural environment when generating route alternatives. MNR noted that, while MTO has done a good job of avoiding the majority of natural features in the study area, MNR has a number of concerns related to natural environment impacts.

MNR did not provide specific comments on fisheries concerns because it was assumed that fisheries issues would be addressed through the process outlined in the MTO/MNR Fisheries Protocol. MNR reviewed each route alternative and provided their comments/concerns on 1:10,000 scale OBM's previously provided by MTO. MNR used a color coding system to provide comments.

Green areas represent no major MNR concerns.

Yellow areas represent concerns which can likely be mitigated.

Action By:

Red areas represent major concerns where alternatives should be investigated, if feasible. Where possible, MNR provided comments on refinements that should be considered to minimize these major concerns. These comments are noted by asterisks. Red areas without an asterisk noted areas where MNR could not identify any possible refinement. It was noted that if the preferred alternative crossed these areas MNR would have serious concerns.

MTO noted that this information will assist in the route refinement stage currently in progress, but stated it may not be possible to select the route which minimizes impacts to the natural environment because this study is being conducted to meet the requirements of the Environmental Assessment Act which requires the evaluation to consider integrated natural, social, economic and cultural impacts.

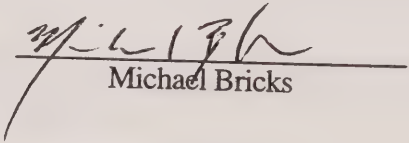
MNR understands that the comprehensive requirements of the Environmental Assessment Act may result in the selection of a route which does not minimize impacts to the natural environment.

It was agreed that CSA would review MNR comments and consider possible refinements. A meeting will be arranged once this review is complete and the public workshops are held. The purpose of this meeting will be to discuss route refinements that resulted from both MNR and public comments. This meeting is expected to occur within a six to eight week time period.

An additional meeting will be arranged once the analysis is complete. The purpose of this meeting will be to discuss the impacts associated with the route alternatives and mitigation measures that will be required. This meeting is expected to occur in late summer/early fall. The input will assist in the selection of a preferred route.

Submitted By:

MB:sn
cc: Those Present


Michael Bricks

MINUTES OF MEETING

DATE: February 28, 1995 **TIME:** 9:00 a.m.
OUR REF.: 6891
LOCATION: Ministry of Natural Resources - Maple District
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT:

K. Reese	-	MNR
D. LeMoire	-	MNR
I. Buchannan	-	MNR
G. Hooper	-	MNR
S. Jacobs	-	MTO
H. Pearson	-	MTO
D. Martin-Downs	-	GLL
D. Hoy	-	GLL
C. Ricketts	-	CSA
L. Kozachuk	-	CSA
M. Bricks	-	CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives. The purpose of the meeting was to identify issues and concerns related to the work conducted to date.

1. Overview of information presented at last meeting and progress to date was provided by Chris Ricketts

As noted at the last meeting (May 31, 1994), the primary corridor generation criterion was to minimize impacts to major natural features. As such it is recognized that the natural environment was given paramount consideration.

Since the last meeting, a set of Public Information Centres (June, 1994) and a set of Workshops (September, 1994) were held. The purpose of these events was to solicit public comment on Corridor Generation and to assist in Route Generation. The workshops focused on verifying natural environment data and obtaining additional information about agricultural operations and socio-economic concerns.

Recently, route alternatives were generated within the corridors. Since the major natural features were avoided at the corridor generation stage, the primary route generation criterion included minimizing impacts to property, consequently minimizing agricultural impacts, and minimizing impacts to communities.

The route alternatives are basically located in two major corridors north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pepperlaw. The southern routes avoid the impacts to Pepperlaw, but

do not provide direct access to the growth areas and will likely generate significant natural environment impacts.

Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The preferred alternative is scheduled to be selected in the Fall of 1995 and the EA report is scheduled to be submitted to MOEE in Summer 1996.

The route alternatives were presented on 1:10,000 air photographs.

MNR staff agreed that the process used for generating corridors and routes was valid but noted that impacts to natural features would have to be mitigated to an acceptable level. Specific areas of interest will include greenland connections, linkage opportunities, wildlife movement opportunities and forest fragmentation.

The following summarizes the major questions asked during the meeting:

Q1: Project Phasing

A1: The EA Report is expected to be submitted in Summer 1996. If there are no major concerns and a hearing is not required full Environmental Assessment Act Approval could be obtained by the Summer of 1997. York Region, Newmarket, East Gwillimbury and Georgina are all requesting MTO accelerate both the Planning and Construction of the project to better meet their development aspirations. MTO is considering submitting the EA in two parts, one from Davis Drive to Herald Road/Green Lane and a second for the remainder of the area.

There is no construction staging plan formalized at this time but it will be included in the EA Report.

Q2: How does new information get incorporated once EA Approval has been granted?

A2: During detail design, design and construction reports are prepared after consultation with external agencies.

Q3: Is Ontario Hydro reviewing the Study to determine impacts to future corridors?

A3: Ontario Hydro is being kept informed of our study. Since the Hydro Study was recently cancelled it will be their responsibility to have regards for the Highway 404 Extension if their study re-commences.

Q4: How will the analysis and evaluation be conducted?

A4: Evaluation criteria are outlined in the Environmental Assessment Proposal (June 10, 1994). A trade-off method and weighting-scoring method will be used to select among alternatives.

Q5: How will the cost for mitigation be documented?

A5: Each alternative will have mitigation costs added to the total construction cost. This will include wildlife underpasses (if incorporated), culverts and structures. Prior to route selection, a meeting will be arranged with MNR to discuss appropriate mitigation for route alternatives. Property acquisition for compensation will be considered for the preferred route during preliminary design.

- Q5: What is the most efficient use of MNR time to review work completed to date?
- A5: MTO will forward MNR 10 copies of the Natural Environment Technical Paper, a 1:50,000 NTS Map with the routes shown, 1:10,000 OBM Maps with the routes shown and will allow MNR to borrow the Colour 1:10,000 PIC Boards following the Public Information Centres. During this discussion MNR noted that the Technical Paper should reference the Natural Heritage Policy Statement, York Region's Greenland System, and any other MNR Policy.

Submitted By:

Michael Bricks

MB:sn

cc: Those Present

MINUTES OF MEETING

DATE: May 31, 1994 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: MNR Maple District

PURPOSE: Opportunity Area for Routing Alternatives

PRESENT:

Chris Tschirhart	-	MNR
Ian Buchanan	-	MNR
Kevin Reese	-	MNR
Fred Leech	-	MTO
Heather Pearson	-	MTO
Deborah Martin-Downs	-	Gartner Lee
Don Fraser	-	Gartner Lee
Chris Ricketts	-	CSA
Michael Bricks	-	CSA

1. A brief overview of progress to date was provided by Chris Ricketts.

The study had recently commenced the phase in which alternatives were generated. It was noted that the natural features generally are oriented north-south. South of Lake Simcoe, the extension of Highway 404 will be oriented east-west and as a result no naturally benign alternatives exist. As a result, a two stage process was proposed to generate routes.

Stage 1: Opportunity Areas

Utilizing secondary data collected from the Ministry of Natural Resources and Lake Simcoe Region Conservation Authority, a natural constraints map (1:50,000 scale) had been developed. The level of detail on this map was consistent throughout the study area.

The natural features were then analyzed, taking into consideration wetlands, large forested tracts, rivers and fish communities and geologic conditions, large and small features were linked together on the surface to create a 'greenland unit' following a set of criteria similar to those used in the York Region official plan Greenlands mapping.

Once the greenland units were identified opportunity areas for possible highway crossings were generated. Typically, opportunity areas include:

- Areas with existing disturbances such as a road, hydro or rail crossing;

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- Areas where the unit is narrow;
- Areas near the fringe of the unit.

No constraint areas based on fisheries were identified in this process. The opportunity areas were then superimposed on a map of built-up areas. Potential 'corridors' were developed which avoided the built-up areas and either avoided natural features or crossed the features within the opportunity areas. The corridors have been left as wide as possible, typically 1 to 2 kilometres in width.

Stage 2: Route Generation

For the corridors identified in stage 1, a more detailed level of information will be collected from additional sources and field investigation. Agricultural details such as farm operations and linked farming operations will also be collected.

This data, along with other data from all areas of the environment will be mapped onto a 1:10,000 scale map in the corridor areas. Using applicable highway design standards, routes will be generated which attempt to minimize impacts.

The routes will be analyzed, refined and mitigated before the evaluation of the preferred route.

2. Data collection and the subsequent opportunity areas (Stage 1) was presented by Deborah Martin-Downs. It was noted that the data included the 1994 updates to the wetlands boundaries.

MNR staff reviewed the information from a process perspective but reserved comment on the specific areas until the Natural Environment Technical Report is available.

3. Representatives from the Ministry of Natural Resources agreed that the two stage process for route generation was valid and that the principles for identifying opportunity areas were appropriate.
4. Ian Buchanan questioned why Ravenshoe Road, which spans the majority of the study area, had not been considered as a corridor opportunity.

Deborah Martin-Downs replied that Ravenshoe Road has not been identified as an opportunity because:

- Ravenshoe Road crosses though the centre of two very large forested swamp provincially significant wetland complexes:
 - the Black River wetland complex; and
 - the Zephyr-Egypt Creek wetland complex.

These large forested wetlands are important components of the York Regional Greenlands system. Ravenshoe Road presently cuts across the centre of the Brown Hill ESA and the Zephyr Creek ESA.

- Several regionally or locally significant species in the Black River complex are concentrated in close proximity to Ravenshoe Road on both sides.
- The existing two-lane road follows the topography closely and includes very little

cut and fill grading. A divided freeway requires a much flatter profile and would necessitate wide areas of cut and fill grading. This significantly wider right-of-way requirement and change in traffic volumes would barrier the movement of many species.


Fred Leech suggested a board be prepared to display at the upcoming PIC with the reasons for excluding Ravenshoe Road as a corridor opportunity.

5. Chris Ricketts noted that 'workshops' were to be held as part as the consultation process. He asked if MNR would be interested in attending the natural workshop.

Ian Buchanan responded that MNR time would probably be better spent reviewing data received at the workshops. He requested that summaries of workshop proceedings be forwarded to MNR.

6. Deborah Martin-Downs questioned who would be the official MNR contact for this project. It was agreed that Chris Tschirhart would be the contact and would handle the coordination with all MNR disciplines and districts.

Submitted By:


Chris Ricketts

CR:cc



P. O. Box 7400
10401 Dufferin Street
Maple, Ontario
L6A 1S9

Our Ref:8538.8.521.YS

August 12, 1993

Ministry of Transportation Ontario
Planning and Design, Area 1 - Central Region
4th Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

Attention: Steve Jacobs

Dear Sirs:

SUBJECT: Route Planning and Environmental Assessment Studies
for Highway 404, extension from Davis Drive (Newmarket)
to North Junction Highway 7/12

Staff of the Ministry of Natural Resources have now reviewed the above proposal and have the following concerns. Note that these comments are on the 404 extension portion of this project. We are commenting separately on the Bradford By-pass portion of the project, which intersects the provincially significant Holland Marsh Wetland.

Large Scale Concerns

This is a major undertaking which will intersect or cross many major areas of resource concerns within this District. The proposed study area encompasses major watercourses and river basins which contribute to the Lake Simcoe watershed, an important fishery resource in Ontario. Secondly, the proposed study area crosses four major linear wetland systems, two of which are provincially significant. The impact of a provincial linear road system on the natural vegetative corridors are well established in the study area.

It is the position of this Ministry that this project should not proceed until all alternatives to this undertaking are fully explored. We fully support section 7.2 of the initial draft paper regarding Generation of Alternative Methods, and the use of constraint mapping for this exercise. This office has extensive vegetation, wetland and wildlife information within the study area that we can make available to your Ministry and your consultants.

MNR will fully expect that the Fisheries Accord regarding route selection and analysis of fish habitat will be utilized in this project. It is also our understanding that our two ministries are formulating a similar accord on wetland. To date this has not been finalized, but given the life span of this project we expect that it will be finalized in time.

Detailed Construction Concerns

There are a number of stream and river crossings related to this project. All of these streams are coldwater fishery streams that contribute to the Lake Simcoe system. MNR is concerned that, unless proper erosion and sediment controls and stormwater management techniques are used on site, especially during construction, this project could negatively impact the nearby tributaries and the downstream resources. During construction, there is a very high potential for sediment to be carried from the site in stormwater flows. This is of concern to our fisheries program should sediment laden stormwater be allowed to enter nearby watercourses or storm sewers which discharge to watercourses. Sediment laden stormwater may result in negative impact on the quality of the receiving waters as it relates to fish and their habitat.

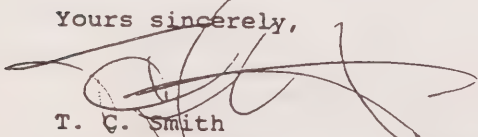
Page 2
August 12, 1993

Accordingly, the Ministry of Natural Resources requires the proponent to carry out the following with respect to this development:

- 1) The exposed area should be kept to a minimum at all times to minimize the potential for erosion;
- 2) Exposed surfaces should be re-stabilized and re-vegetated as soon as possible;
- 3) Appropriate sediment control devices or structures should be used during construction to retain sediment on the site. If necessary, temporary sediment ponds should be used to provide the detention time required for sufficient dewatering;
- 4) Appropriate stormwater management techniques must be employed, both during and after construction, to minimize the amount of sediment laden stormwater entering nearby watercourses or storm sewers which discharge to watercourses. (and to provide water quality treatment of stormwater after construction.)
- 5) Erosion and sedimentation control measures as outlined in the Ministry of Transport Ontario's Erosion and Sedimentation Control, Drainage Manual, Chapter F, and Ministry of Natural Resources Technical Guidelines for Erosion and Sediment Control (1989); and,
- 6) A recent Fisheries Management Plan for the Maple District has identified strategies and tactics for ensuring that development proposals and construction projects are compatible with the long term maintenance of this resource. These tactics include implementing the Federal Department of Fisheries and Oceans Policy for the management of fish habitat, including the principles of net gain/no net loss of fish habitat; and ensuring the establishment of urban stormwater management systems which are appropriate to the sensitivity of the receiving waterbody. Methods of achieving Ministry objectives in environmental assessment projects include documenting fish habitat present in the area, defining impacts upon fish habitat, and applying mitigative techniques such as construction windows and sedimentation and erosion control. In cases where harmful habitat alteration cannot be avoided through mitigation techniques, the proponent should specify how habitat loss will be compensated to satisfy Federal Fisheries legislation and policy.
- 7) That in-stream works may only be permitted after a thorough analysis of alternatives to the crossing is completed and reviewed by this ministry in accordance with the accord between our two ministries.

We are therefore asking for a meeting with you and your staff to refine the process by which alternatives within the undertaking can be evaluated. Please advise us of your decision. Should you have any questions, please contact Mr. Tracy Smith (416-832-7239) at this office.

Yours sincerely,



T. C. Smith
Area Supervisor - York North
Maple District

CT/js

cc: Lake Simcoe Conservation Authority - Attn: Planning Dept.

Never distributed to attendees.

MEMO

TO: File 6891

FROM: Chris Ricketts

DATE: June 8, 1993 @ 9:00 am

OUR REF.: 6891

RE: MNR Meeting

PRESENT: MNR ^{CR}
Chris Tshirhart - Maple District (part-time at meeting)
Anne Wilmont - Midhurst - handles west of Holland River
Roy Alkema - Midhurst - handles west of Holland River
Ian Buchanan - York North

MTO
Fred Leech
Steve Jacobs
Heather Pearson
Terry Steele

Other
Cam Kitchen - Ecoplans
Deborah Martin-Downs - Gartner Lee
Steve Schijns - McCormick Rankin
Chris Ricketts - Cole, Sherman

PLACE: MNR Maple District

- 1) Steve Jacobs gave a brief study introduction.
- 2) Fred Leech introduced the EAP and copies of the Highway 404 Extension EAP were handed out.
- 3) Most of the discussion focused on the Factor Specific Terms of Reference. MTO to incorporate the changes agreed to, review with consultants and forward to MNR.

4) Notes

- * Chris Tshirhart questioned study area on Bradford Bypass. He felt it looked constrained from a Natural Environmental point of view and may be better south of Bradford.
- Spring investigation for cool water fish should be included.
- Swales are fine for stormwater quality facilities but dry ponds are not.
- All investigations on routes other than the recommended route will be done using secondary data or reconnaissance level information.

Submitted By

Chris Ricketts
Project Manager

CR:sp

MINUTES OF MEETING

DATE: October 30, 1996 **TIME:** 1:00 p.m.

OUR REF.: 6891

LOCATION: CSA Offices

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

R. Valaitis	-	OMAFRA
S. Jacobs	-	MTO
H. Pearson	-	MTO
S. Bradley	-	Gartner Lee
C. Ricketts	-	CSA
M. Bricks	-	CSA
L. Kozachuk	-	CSA

PURPOSE: Presentation of the Technically Preferred Route

1. Technically Preferred Route

C. Ricketts summarized the process followed leading up to the selection of the preferred route, including the generation of corridors which avoided large, contiguous wetlands in the central study area as well as urban areas, and the generation of route alternatives which sought to reduce impacts to all areas of the environment.

The Technically Preferred Route is the extension of Highway 404 between Davis Drive and Durham Road 23 along the northernmost alignment in the study area (see attached). Between Durham Road 23 and Highway 12, Highway 48 will be widened to four lanes.

No improvements are proposed for the Highway 12/48 corridor as part of this study. A separate study by MTO is looking at short- to mid-term improvements within the existing highway right-of-way.

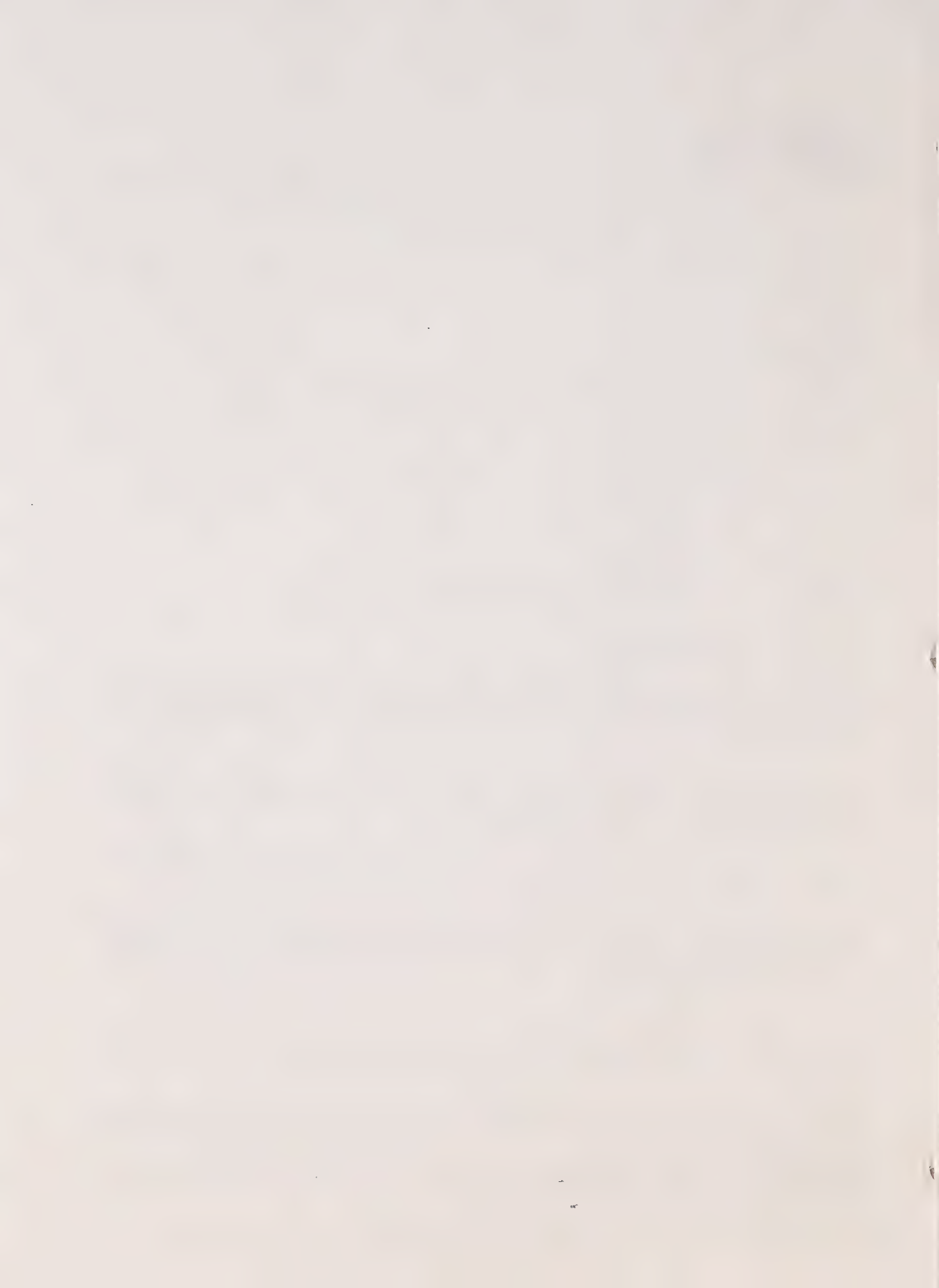
A summary package outlining the evaluation of the route segments and the recommendations was distributed to OMAFRA. Other materials available for review were discussed. A 1:50 000 scale plan of the Technically Preferred Route, the Final Agricultural Technical Paper and evaluation decision rules will be forwarded to OMAFRA.

2. Consideration of Agricultural Impacts

During the corridor generation stage, it was recognized that agricultural land uses were homogeneous throughout the study area, outside of wetland areas and developed urban areas.

During the route generation stage, impacts to individual operations were reduced by following property lines, avoiding specialty crop fields and avoiding farm buildings representing high capital investment, where possible.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.



Existing agricultural uses were inventoried during the data collection stage through windshield surveys and discussions with information centre attendees. Meetings were also held with representatives from OMAFRA during the course of the study to obtain comments on the assessment of agricultural impacts.

A meeting was also held with York and Durham OFA members to discuss route generation issues, data collection and the significance of agriculture in the evaluation of alternatives.

At this stage of the study, MTO is seeking comments with respect to the selection of the preferred route. However, comments on mitigation of impacts on a site specific basis will be required in the near future (early 1997).

R. Valaitis stated that, from a provincial perspective, the lands west of Highway 48 in the Belhaven to Elm Grove area were of greatest concern, since this area is designated as a provincially significant agricultural area. The preferred route does impact agricultural operations in this significant area, but impacts were reduced by following property lines and edges of fields. R. Valaitis agreed that the impacts to the agricultural operations have been reduced with the route generation criteria applied.

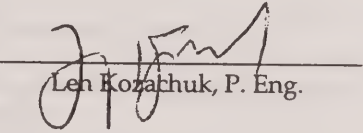
3. What's Next

MTO requested that OMAFRA forward a letter to the Project Team indicating that they agree with the principles followed to incorporate the agricultural environment into the study and reduce agricultural impacts to the study area.

OMAFRA indicated that they would like to submit comments on the preferred route once the public's comments have all been received. The Project Team will flag any unusual agriculture-related concerns and outline to OMAFRA the proposed action to be taken to deal with each comment.

It was noted that MTO is proposing to submit a draft of the EA Report for Pre-submission consultation in early (April, May) 1997, with a final report submission to MOEE scheduled for mid-1997.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs	- MTO
H. Pearson	- MTO
R. Valaitis	- OMAFRA
S. Bradley	- GLL

MINUTES OF MEETING

DATE: April 20, 1995 **TIME:** 7:00 p.m.

OUR REF.: 6891

LOCATION: Udora Community Centre

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: York and Durham Region OFA Members
S. Jacobs - MTO
H. Pearson - MTO
R. Rossi - MTO
D. Toombs - OMAFRA
S. Bradley - GLL
L. Kozachuk - CSA

PURPOSE: Presentation of Highway 404 Route Alternatives

Durham and York Chapters of the Ontario Federation of Agriculture invited representatives of the Highway 404 Extension EA Project Team to make a presentation to its members at their monthly members meeting. The purpose of the meeting was to review the project progress to date and discuss upcoming project activities.

H. Herrema (Durham OFA) introduced the members of the Project Team. S. Jacobs provided a summarized chronology of studies and events preceding initiation of the Highway 404 Extension EA. He also briefly reviewed the need and justification for the study and the corridor generation process.

L. Kozachuk reviewed the route generation criteria and briefly reviewed the route alternatives generated in the corridors. He also discussed the project schedule and evaluation process.

S. Bradley discussed the agricultural evaluation criteria and indicators, and demonstrated how agricultural impacts would be assessed during the route evaluation stage.

The floor was then opened to questions and comments for the Project Team:

- C. Agriculture will not be weighed as highly as some of the other factors being considered in the route evaluation.
- Q. How will impacts to agriculture be weighed against impacts to wetlands and communities?
- A. *On the back of the comment sheets available at the last two sets of Public Information Centres, the evaluation factors and criteria were listed. Attendees were asked to assign points to each factor and criterion to reflect the weight each item should have in the evaluation. The weightings of all attendees will be combined to determine the relative weights of each item. The relative weight of each factor will determine which factor is ranked higher in importance relative to the others.*

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

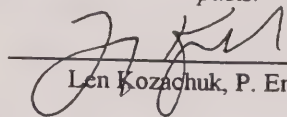
- C. Farms with silos in good condition should not be considered as being High Value unless the silos are being used.
- C. Bank barns that represent Low Value in terms of capital investment may have a high cultural/historic value.
- C. Old buildings should be torn down.
- Q. How is the capital investment value being assessed?
- A. *The investment value is a relative comparison based on the condition of other agricultural operations in the study area.*
- C. Concerned about the loss of abandoned land with a high soil capability.
- Q. To what extent is soil classification considered in the evaluation?
- A. *Soil classification, together with the type of operation, is used as a measure of productivity of farmland, which is considered in determining the magnitude of impact associated with a route alternative to an agricultural operation.*
- Q. Are underpasses going to be provided for farms severed by the proposed highway to reduce the out-of-way travel for agricultural equipment?
- A. *Generally an underpass is not provided on private land unless it is shown to be the most effective method to mitigate impacts to an individual operation.*
- Q. What will happen to small sections of fields landlocked by the new highway?
- A. *MTO will usually purchase landlocked properties, and endeavour to sell them to the adjacent land owners*
- Q. How close to the new highway would a building have to be before it is moved or purchased by MTO?
- A. *No explicit rules governing distance to a highway; it depends on the factors associated with the individual site. The route alternatives were aligned with existing property lines to reduce impacts to property and buildings.*
- Q. Will existing roads be grade-separated?
- A. *Grade separations will be constructed at road crossings as necessary. Grade separation and road closure scenarios have not yet been completed for each route alternative.*
- C. The province should not encourage development north of Highway 407. Extending Highway 404 will attract development to northern York and Durham Regions.
- C. The further south the alignment is located (i.e. with route C), the more development there will be between the highway and Lake Simcoe, to the detriment of agricultural areas.
- Q. Has York Region submitted its comments on alignment B3B?
- A. *York Region has submitted its concerns regarding the impact on the urban boundary of Keswick. The Project Team is reviewing those comments.*

- Q. Where is the proposed location for the Bradford Bypass?
- A. *The Bradford Bypass will connect into the extension of Highway 404 north of Queensville Sideroad near Holborne Road.*
- Q. Why aren't all the alternative routes aligned to connect to Highway 7?
- A. *The need to connect to the Highway 12/48 corridor was found to be much greater than the need to connect to Highway 7.*
- Q. Will service roads be constructed to reduce the out-of-way travel for agricultural equipment?
- A. *Service roads will be provided where required to maintain access to property, but not exclusively for agricultural equipment.*
- Q. Will soil capability be considered in determining the value of an agricultural operation? If so, the CLI information presented at the last set of PIC's was incorrect.
- A. *Soil capability will be incorporated in assessing value of an operation. The CLI information presented is the best available information at this time. The value of an operation will not be based strictly on soil capability; it will generally be determined from sale prices of similar operations in the area.*
- Q. What is the time frame for property acquisition?
- A. *Generally three to five years prior to construction. The value of property required will be assessed at that time.*
- Q. What is the construction schedule?
- A. *Once approval of the report is received (tentatively 1997), work will begin on the section between Davis Drive and Herald Road Green Lane. No schedule has been established for work north of Herald Road/Green Lane.*
- Q. Can the extension of Highway 404 be delayed indefinitely?
- A. *Yes; no approvals to proceed with construction have been received.*
- Q. Can the alignment of the preferred route be changed once this study is completed?
- A. *Yes, however, the purpose of this planning study is to have a right-of-way designated for the highway, enabling development to occur around the future highway. Changing the alignment may result in greater impacts than those associated with the recommended route identified in this study.*
- Q. Will a change of provincial government affect this study?
- A. *Yes. This study has received a lot of support from past provincial governments, as well as regional and municipal governments. However, anything can happen with a change of government.*
- Q. Does growth in York Region depend on Highway 404 being extended?
- A. *Growth will likely continue in York Region without an extension of Highway 404, increasing congestion on local roads. This congestion will negatively impact farm operations.*
- C. *During construction, congestion on local roads will increase, because increased volumes of recreational traffic will be dumped on to local roads.*

Q. How will impacts to fields with tile drainage be mitigated?

A. *Fields with tile drainage will be avoided, where possible. Where drained fields are impacted, drainage will be maintained as best as possible to reduce impacts.*

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: S. Jacobs
H. Pearson
C. Ricketts
C. Murray
S. Bradley
D. Toombs
OFA Reps

MINUTES OF MEETING

DATE: March 14, 1995 **TIME:** 9:30 a.m.

OUR REF.: 6891

LOCATION: Cole Sherman & Associates Offices

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

D. Toombs	-	OMAFRA
K. Partanen	-	OMAFRA
R. Rossi	-	MTO
H. Pearson	-	MTO
P. Neals	-	GLL
S. Bradley	-	GLL
L. Kozachuk	-	CSA
M. Bricks	-	CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives. The purpose of the meeting was to identify issues and concerns related to the work completed to date.

1. Overview of information presented at last meeting and progress to date was provided by Len Kozachuk.

As noted at the last meeting (August 22, 1994), the primary corridor generation criterion was to minimize impacts to major natural features. As such it is recognized that the natural environment was given paramount consideration.

Since the last meeting, a set of Public Information Centres (June, 1994) and a set of Workshops (September, 1994) were held. The purpose of these events was to solicit public comment on Corridor Generation and to assist in Route Generation. The workshops focused on verifying natural environment data and obtaining additional information about agricultural operations and socio-economic concerns.

Recently, route alternatives were generated within the corridors. Since the major natural features were avoided at the corridor generation stage, the primary route generation criterion included minimizing impacts to property, consequently minimizing agricultural impacts, and minimizing impacts to communities.



The route alternatives are basically located in two major corridors north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pefferlaw. The southern routes avoid the impacts to Pefferlaw, but do not provide direct access to the growth areas and will likely generate significant natural environment impacts.

These route alternatives will be presented to the public at upcoming Public Information Centres. These information centres will provide the opportunity for area farmers to verify and update information collected to date. Comments and concerns obtained at this round of information centres relating to agricultural issues will be forwarded to OMAFRA.

Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The preferred alternative is scheduled to be selected in the Fall of 1995 and the EA report is scheduled to be submitted to MOEE in Summer 1996.

The route alternatives were presented on 1:10 000 air photographs.

OMAFRA staff agreed that the process used for generating corridors and routes was valid.

The following summarizes the major questions asked during the meeting:

Questions from OMAFRA to MTO

Q1: Project Phasing

A1: The EA Report is expected to be submitted in Summer 1996. If there are no major concerns and a hearing is not required full Environmental Assessment Act Approval could be obtained by the Summer of 1997. York Region, Newmarket, East Gwillimbury and Georgina are all requesting MTO accelerate both the Planning and Construction of the project to better meet their development aspirations. MTO is considering submitting the EA in two parts, one from Davis Drive to Herald Road/Green Lane and a second for the remainder of the area.

There is no construction staging plan formalized but it will be included in the EA Report.

Q2: How will MTO assess the agricultural impacts associated with the route alternatives?



A2: The evaluation criteria and method of assessing impacts are outlined in a Socio-Economic Technical Paper which is currently being finalized. Criteria will include impacts to farming operations, impacts to soil classification, and impacts to Agriculturally designated land.

Questions from MTO to OMAFRA

Q1: How does OMAFRA value Sod Farms?

A1: Sod Farms should be valued as any other cash crop.

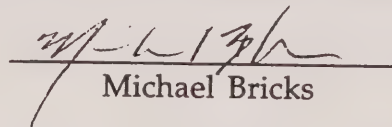
Q2: How does OMAFRA view organic farms?

A2: OMAFRA is not involved in the certification of organic farms. Certification is obtained through Organic Farming Associations. It is OMAFRA's position that organic farming is a management approach. This type of farming operation should be considered a specialty crop. Dale Toombs agreed to forward contact names of Organic Farming Associations in order to allow MTO to further research the certification process.

Q3: What is the most efficient use of OMAFRA time to review work completed to date?

A3: MTO will forward OMAFRA copies of a 1:50,000 scale map showing the location of route alternative as soon as possible for information purposes and the Socio-Economic Technical Paper when finalized. It was noted that MTO is creating a GIS data base which will include an agricultural layer. Copies of this will be available to OMAFRA if required. MTO will also forward copies of Public Information Centre and Workshop summaries.

Submitted By:


Michael Bricks

MB:cc

cc: Those Present

MINUTES OF MEETING

DATE: August 22, 1994 **TIME:** 10:00 a.m.

OUR REF.: 6891

PROJECT: Highway 404 Extension Environmental Assessment

LOCATION: Cole, Sherman Offices

PRESENT:

Dale Toombs	- OMAF
Steve Jacobs	- MTO
Heather Pearson	- MTO
Terry Steele	- MTO
Paul Neals	- GLL
Chris Ricketts	- CSA
Mike Bricks	- CSA

PURPOSE: Opportunity Areas For Route Alternatives

1. A brief overview of progress to date was provided by Chris Ricketts

The study has recently commenced the phase in which alternatives were generated. A two stage process was proposed to generate routes.

Stage 1: Opportunity Areas (Corridors)

Secondary data was utilized to identify Opportunity Areas. The information used to obtain a Regional Overview of agricultural activity in the study area included soil type and intensity of use. The information was verified by reviewing Agricultural Designations in both the Draft York and Durham Official Plans.

Once this information was mapped with natural and social information no clear Opportunity Areas were identified. It was determined that Opportunity Areas would be identified by examining possible natural feature crossing locations. As a result of this, a number of Corridors were identified and presented to the public and municipal councils in June 1994.

Stage 2: Route Generation

For the corridors identified in stage 1, a more detailed level of information will be collected from additional sources and field investigations. Agricultural details such as farm operations and linked farming operations will also be collected.

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This data, along with other data from all areas of the environment will be mapped onto a 1:10,000 scale map in the corridor areas. Using applicable highway design standards, routes will be generated which attempt to minimize impacts.

The routes will be analyzed, refined and mitigated before the evaluation of the preferred alternative.

2. OMAF Comments

Agricultural designation in the York and Durham Official Plans is a more valid indicator of agricultural interest rather than soil classification and type of use. OMAF and the Region of York are still discussing the boundaries of the designations in the York Official Plan and it is expected that recommendations will be forthcoming in the near future.

Although the route is not precluded from crossing an agricultural designation, strong preference should be given to those routes which avoid the agricultural designation. Then route selection should minimize impacts on agricultural lands and operations.

It was further noted that OMAF gives preference to the protection of large contiguous agricultural blocks as opposed to areas on prime agricultural soils that have been fragmented into small parcels.

3. Future Work

At the previous series of Public Information Centres (June, 1994) area farmers were asked to identify farming operations to the study team. Farmers in close proximity to a corridor location encouraged to discussed the potential impacts of a Highway on their operations.

Workshops have been organized for September 1994, to assist in the data collection process. Information to be collected at these workshops include type of operation and location of linked farming operations. It was noted that although OMAF will not be attending these workshops, minutes will be forwarded.

Once the workshops has been held, routes within the corridors will be generated and analyzed. Agricultural design criteria will be forwarded to OMAF by Paul Neals.

Submitted By: _____

Michael Bricks

MB:ks



Ontario

Ministry of
Agriculture
and Food

Ministère de
l'Agriculture et
de l'Alimentation

Legislative Buildings
Queen's Park
Toronto, Ontario

Hôtel du gouvernement
Queen's Park
Toronto (Ontario)

M7A 2B2

Land Use Planning Branch

326-3600

October 19, 1993 (Tuesday)

Steve Jacobs
Ministry of Transportation
Planning and Design
Area 1, Central Region
4th Floor, Atrium Tower
1201 Wilson, Avenue
Downsview, Ontario
M3M 1J8

Dear Mr. Jacobs:

RE: Environmental Assessment Studies for:

- HWY 404 Extension from Davis Drive to North Junction Highway 7/12
 - Bradford Bypass from Hwy 400 to Hwy 404 Extension
-

Staff of this Ministry have completed a review of the above-noted proposals. Consideration has been given to the matter in terms of the goals and objectives of this Ministry and the criteria and policies contained in the Food Land Guidelines, which is the provincial policy on planning for agriculture.

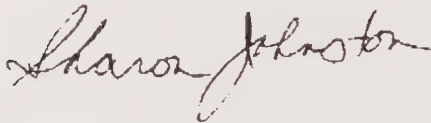
I am attaching a copy of the Agricultural Assessment Requirements for Major Projects. This guide outlines the areas of concern for this Ministry.

With respect to the two proposals, there is only once specific concern at this time. The Preliminary Listing of Issue/Concerns (Natural Environment, subsection soil) should contain a specific listing for Speciality Crops, particularly the Holland Marsh soils. This should be evaluated in terms of loss of specialty crop soil in the same way that the studies propose to evaluate the loss of Class 1 soil.

The Ministry of Agriculture and Food would like to continue to be involved in both projects, in particular, the weighting and ranking of criteria within both study areas. I will make myself available to you for any meetings you may be having on this issue between now and the New Year. After January, Heather Gariepy, Land Use Specialist in Newmarket will be participating in these projects.

If you have any questions regarding the assessment, please do not hesitate to call.

Yours truly,

A handwritten signature in cursive script, appearing to read "Sharon Johnston".

Sharon Johnston
District Manager

cc: Trish Grant

AGRICULTURAL ASSESSMENT REQUIREMENTS FOR MAJOR PROJECTS

In determining the agricultural impact of a project upon the agricultural resource and community, the following information should be documented and assessed:

1. Potential Loss of Agricultural Land

The potential loss of agricultural land should be evaluated by documenting and assessing the following:

- (a) the soil capability for agriculture in the study area and the percentage of each class on various site alternatives, according to the Canada Land Inventory (CLI);
- (b) the soil capability for specialty crops (fruit, vegetables, tobacco, etc.) within the study area, according to the County/Region/District Soil Survey Maps; and specialist advice.

CLI maps at a scale of 1:50,000 should be used. A more detailed soil survey may be necessary when reviewing specific site alternatives.

2. Potential Loss of Existing Agricultural Facilities

- (a) the types and acreages of crops grown, including specialty crops;
- (b) the type of livestock facilities, and the number of livestock in each facility;
- (c) the capital investment in agriculture
 - buildings and facilities
 - land improvements (drainage, clearing, stone removal, conservation)
 - irrigation systems
 - investment in crops and livestock;
- (d) the ownership and farm management input
 - owner or tenant occupied
 - full or part-time farmer or hobby farmer

3. Impact on On- Site and Off-Site Farm Operations

If a proposal only entails part of an existing farm operation it may have a detrimental impact on the rest of the farm holding. Moreover, a proposal may adversely affect neighbouring farm operations. The following should be documented and assessed:

- (a) the impact on water tables;
- (b) the impact on surface and subsurface drains and drainage patterns;
- (c) the increase in traffic and its effect on moving farm machinery;
- (d) the possibility of air, noise or water pollution and its effect upon agriculture;
- (e) the effects on ingress and egress to farm operations;
- (f) the increase in the possibility of trespass and vandalism on farms;
- (g) the possible increase in birds and rodents and its effects on neighbouring farms;
- (h) the fragmentation of farm fields;
- (i) the restrictions on possible farm expansions or farm management practices.

4. Impact on Agricultural Community

An effort should be made to define agricultural communities and to determine the effect a proposal will have on these communities. Criteria to be assessed are:

- (a) the location of integral farm related commercial/industrial operations, such as feed mills, farm machinery outlets, storage facilities, etc.;
- (b) the location of a potential site, with regard to being an isolated farm pocket or within a defined agricultural community;
- (c) the effect on the movement of farm machinery and the farmers' linkages to the farm community;
- (d) the placement of physical barriers between farm neighbours.

MINUTES OF MEETING

DATE: November 1, 1996 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: LSRCA Offices, Newmarket

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

M. Walters	-	LSRCA
R. Bos	-	LSRCA
T. Hogenbirk	-	LSRCA
S. Jacobs	-	MTO
H. Pearson	-	MTO
L. Kozachuk	-	CSA
D. Martin-Downs	-	Gartner Lee

PURPOSE: Presentation of Technically Preferred Route

This meeting was held to present the Technically Preferred Route for the above project as well as the Technically Preferred Route for the Bradford Bypass. The discussions regarding the Bradford Bypass have been minuted separately by McCormick Rankin.

S. Jacobs briefly reviewed the schedule for both projects, including the upcoming series of Public Consultation Session, report pre-submission and final submission to MOEE.

L. Kozachuk reviewed the work completed on the Highway 404 Extension since the last presentation to the LSRCA, including the generation of routes within corridors, and the analysis and evaluation of the alternative routes. The Technically Preferred Route is situated in the northern part of the study area (see attached).

The preferred route is being presented to councils, ministries, agencies and the public to obtain comments on the route location and identify possible refinements. MTO is proposing to submit the final EA Report to MOEE in mid-1997.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

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Internet: colesher@idirect.com


At this stage of the study, MTO is seeking comments with respect to the selection of the preferred route. However, comments on mitigation of impacts on a site-specific basis will be required in the near future (early 1997).

It was noted that, given the long-term schedule for implementing the recommended route, it would be appropriate to identify principles and commitments to further consultation, rather than specific details of proposed mitigation of floodplain impacts. Discussions of such details will be reserved until the detail design stage.

The following items will be forwarded to LSRCA for their review and information:

- natural environment technical paper
- rationale for trade-offs of natural environmental impacts
- electronic drawing files of recommended route, once completed (to be added to LSRCA's base mapping).

Submitted By:



Len Kozachuk, P. Eng.

LK:cc

cc: M. Walters
S. Jacobs
H. Pearson
D. Martin-Downs

MINUTES OF MEETING

DATE: March 3, 1995 **TIME:** 2:00 p.m.
OUR REF.: 6891
LOCATION: Lake Simcoe Region Conservation Authority Offices
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT:

M. Walters	- LSRCA
R. Vos	- LSRCA
D. Frank	- LSRCA
T. Hogenbrik	- LSRCA
S. Jacobs	- MTO
D. Martin-Downs	- GLL
D. Hoy	- GLL
C. Ricketts	- CSA
L. Kozachuk	- CSA
M. Bricks	- CSA

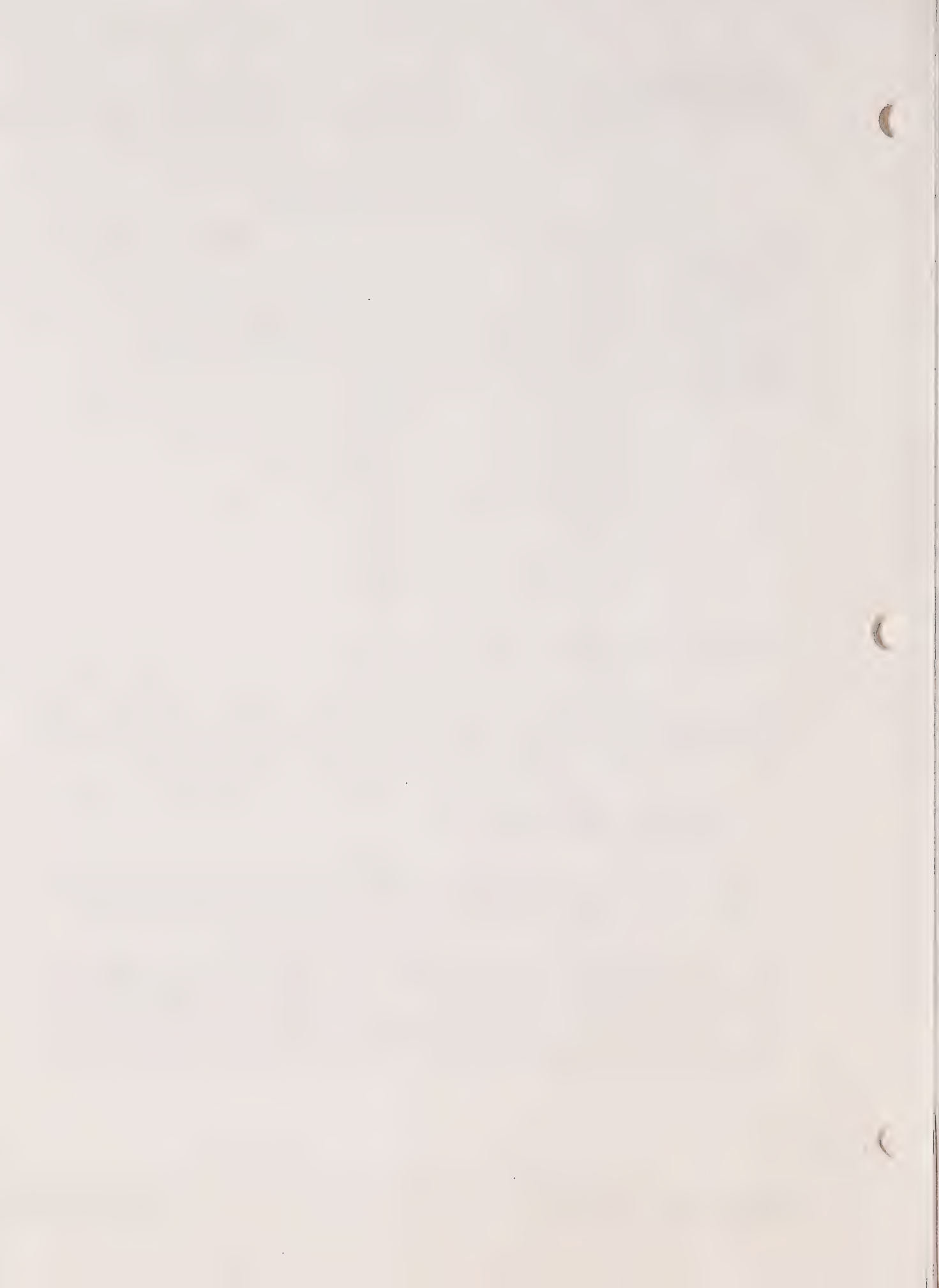
PURPOSE: Presentation of Route Alternatives

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1. Overview of information presented at last meeting and progress to date was provided by Chris Ricketts

As noted at the last meeting (June 29, 1994), the primary corridor generation criterion was to minimize impacts to major natural features. As such it is recognized that the natural environment was given paramount consideration.

Since the last meeting, a set of Public Information Centres (June, 1994) and a set of Workshops (September, 1994) were held. The purpose of these events was to solicit public comment on Corridor Generation and to assist in Route Generation. The workshops focused on verifying natural environment data and obtaining additional information about agricultural operations and socio-economic concerns.



Recently, route alternatives were generated within the corridors. Since the major natural features were avoided at the corridor generation stage, the primary route generation criterion included minimizing impacts to property, consequently minimizing agricultural impacts, and minimizing impacts to communities.

The route alternatives are basically located in two major corridors north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pefferlaw. The southern routes avoid the impacts to Pefferlaw, but do not provide direct access to the growth areas and will likely generate significant natural environment impacts.

Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The preferred alternative is scheduled to be selected in the Fall of 1995 and the EA report is scheduled to be submitted to MOEE in Summer 1996.

The route alternatives were presented on 1:10 000 air photographs.

LSRCA staff agreed that the process used for generating corridors and routes was valid.

The following summarizes the major questions asked during the meeting:

Q1: Project Phasing

A1: The EA Report is expected to be submitted in Summer 1996. If there are no major concerns and a hearing is not required full Environmental Assessment Act Approval could be obtained by the Summer of 1997. York Region, Newmarket, East Gwillimbury and Georgina are all requesting MTO accelerate both the Planning and Construction of the project to better meet their development aspirations. MTO is considering submitting the EA in two parts, one from Davis Drive to Herald Road/Green Lane and a second for the remainder of the area.

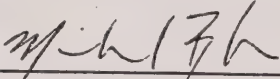
There is no construction staging plan formalized but it will be included in the EA Report.

Q2: There are two plans of Subdivision in the Pefferlaw area that the Conservation Authority are currently commenting on. Is MTO aware of these subdivisions?

A2: MTO is aware of one of the Subdivisions. The Town of Georgina will be contacted to find out the status the other subdivision.

- Q3: What is the most efficient use of LSRCA time to review work completed to date?
- A3: MTO will forward LSRCA two copies of the Natural Environment Technical Paper, a 1:50,000 NTS Map with the routes shown, and the digitized route alternatives base when complete. MTO will also forward copies of Public Information Centre and Workshop summaries.

Submitted By:


Michael Bricks

MB:cc

cc: Those Present

MINUTES OF MEETING

DATE: June 29, 1994 **TIME:** 2:00 p.m.

OUR REF.: 6891

LOCATION: Lake Simcoe Region Conservation Authority Offices (Newmarket)

PURPOSE: Opportunity Area for Routing Alternatives

PRESENT:

Mike Walters	- LSRCA, Supervisor of Environmental Services
Renie Vos	- LSRCA, Manager Policy and Planning
Tom Hogenvirk	- LSRCA, Authority Engineer
Steve Jacobs	- MTO
Heather Pearson	- MTO
Deborah Martin-Downs	- Gartner Lee
Chris Ricketts	- CSA
Michael Bricks	- CSA

1. A brief overview of progress to date was provided by Chris Ricketts.

The study had recently commenced the phase in which alternatives were generated. It was noted that the natural features generally are oriented north-south. South of Lake Simcoe, the extension of Highway 404 will be oriented east-west and as a result no naturally benign alternatives exist. As a result, a two stage process was proposed to generate routes.

Stage I: Opportunity Areas

Utilizing secondary data collected from the Ministry of Natural Resources and Lake Simcoe Region Conservation Authority, a natural constraints map (1:50,000 scale) had been developed. The level of detail on this map was consistent throughout the study area.

The natural features were then analyzed, taking into consideration wetlands, large forested tracts, rivers and fish communities and geologic conditions, large and small features were linked together on the surface to create a 'greenland unit' following a set of criteria similar to those used in the York Region official plan Greenlands mapping.

Once the greenland units were identified opportunity areas for possible highway crossings were generated. Typically, opportunity areas include:

- Areas with existing disturbances such as a road, hydro or rail crossing;
- Areas where the unit is narrow;
- Areas near the fringe of the unit.

No constraint areas based on fisheries were identified in this process. The opportunity areas were then superimposed on a map of built-up areas. Potential 'corridors' were developed which avoided the built-up areas and either avoided natural features or crossed

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

the features within the opportunity areas. The corridors have been left as wide as possible, typically 1 to 2 kilometres in width.

Stage 2: Route Generation

For the corridors identified in stage 1, a more detailed level of information will be collected from additional sources and field investigation. Agricultural details such as farm operations and linked farming operations will also be collected.

This data, along with other data from all areas of the environment will be mapped onto a 1:10,000 scale map in the corridor areas. Using applicable highway design standards, routes will be generated which attempt to minimize impacts.

The routes will be analyzed, refined and mitigated before the evaluation of the preferred route.

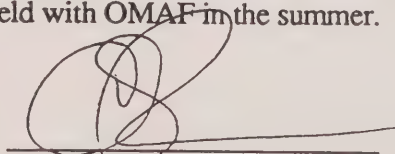
2. Data collection and the subsequent opportunity areas (Stage 1) were presented. It was noted that Ravenshoe Road has not been identified as an opportunity because:

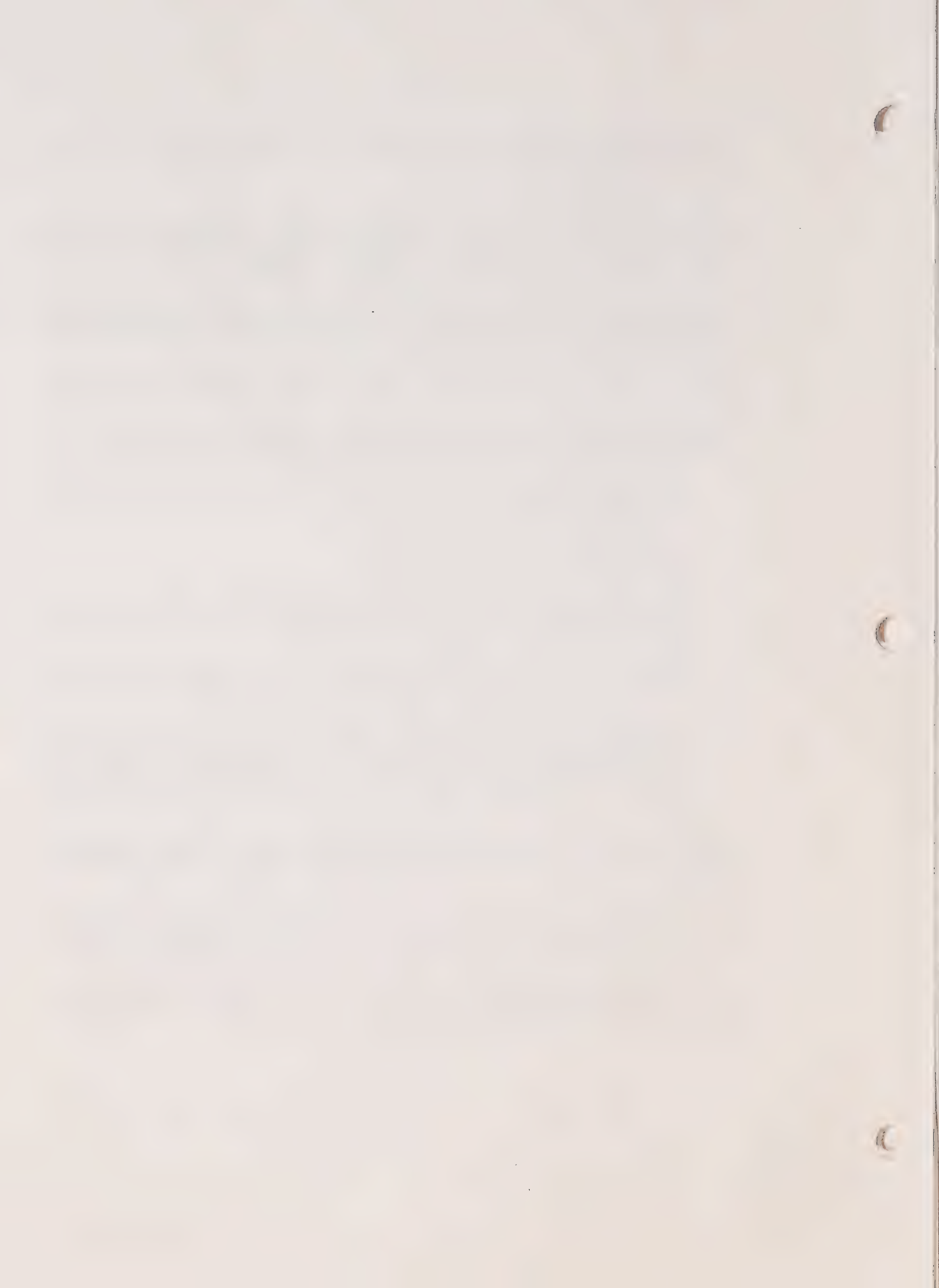
- Ravenshoe Road crosses through the centre of two very large forested swamp provincially significant wetland complexes:
 - the Black River wetland complex; and
 - the Zephyr-Egypt Creek wetland complex.

These large forested wetlands are important components of the York Regional Greenlands system. Ravenshoe Road presently cuts across the centre of the Brown Hill ESA and the Zephyr Creek ESA.

- Several regionally or locally significant species in the Black River complex are concentrated in close proximity to Ravenshoe Road on both sides.
 - The existing two-lane road follows the topography closely and includes very little cut and fill grading. A divided freeway requires a much flatter profile and would necessitate wide areas of cut and fill grading. This significantly wider right-of-way requirement and change in traffic volumes would barrier the movement of many species.
3. Representatives from the Ministry of Natural Resources agreed that the two stage process for route generation was valid and that the principles for identifying opportunity areas were appropriate.
4. Mike Walters noted that the Conservation Authority had recently obtained GIS based mapping of features throughout this jurisdiction. Deborah Martin-Downs to investigate if the information in digital format would be useful for the natural component of the study.
5. It was questioned if OMAF has seen the corridors. Chris Ricketts responded that the OMAF representative (Heather Gariepy) had attended the external team meeting in June, 1994 and that a meeting would be held with OMAF in the summer.

Submitted By:


Chris Ricketts





Ministry of
Environment
and Energy
August 15, 1994

Ministère de
l'Environnement
et de l'Énergie

7 Overlea Boulevard
4th Floor
Toronto ON M4H 1A8

7 boulevard Overlea
4^e étage
Toronto ON M4H 1A8

Mr. Steve Jacobs, P. Eng.
Senior Project Engineer
Ministry of Transportation
Planning Office, 1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8

Dear Mr. Jacobs:

RE: Highway 404 Extension Environmental Assessment Study
Davis Drive to Highway 12
Our File No. EA 03-02-05

We have reviewed the Environmental Assessment Proposal (EAP) for the Highway 404 Extension from Davis Drive to Highway 12, dated June 10, 1994, and generally agree with the proposal. We have, however, a few minor concerns.

1. It states on page 38 of the documentation that there is a common need and justification for both the Bradford Bypass and the Highway 404 Extension. It would seem, from your documentation, that even though is an overlap in the study areas that there is a need for both undertakings. It is recommended that the EA provide more information to validate this conclusion when discussing the alternatives to the undertaking.
2. In Exhibit 15, (Evaluation Criteria) under Natural Environment, another criteria should be added-contaminated soil.

If you require further consultation, please feel free to contact me at (416) 467-3019.

Yours truly,

G. Casonato, P. Eng.
Coordinator, Environmental Assessment
Technical Support Section





Ontario

Ministry
of the
Environment
and Energy

Ministère
de
l'Environnement
et de l'Énergie

ENVIRONMENTAL PLANNING BRANCH

Telephone: (416) 440-3739

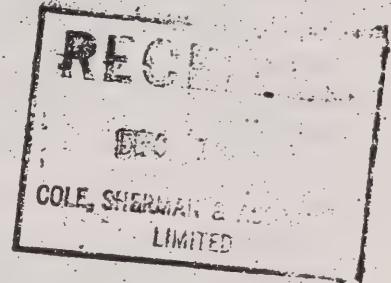
Facsimile: (416) 440-7039

250 Davisville Avenue
Toronto, Ontario
M4S 1H2
3rd Floor

250, avenue Davisville
Toronto (Ontario)
M4S 1H2

December 6, 1993

Mr. Steve Jacobs
Senior Project Manager
Ministry of Transportation
4th Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8



Dear Mr. Jacobs

I apologize for the delay in providing our comments on the draft Environmental Assessment Proposal (EAP) for the Highway 404 Extension, Davis Drive to North Junction of Highways 7/12, dated June 7, 1993. To date, the technical reviewers of the Ministry have limited experience in reviewing these documents. I anticipate that our review time will improve as staff become more familiar with these documents.

As a point of clarification, it is important for proponents to distinguish between the role of the Ministry as the Review Coordinator and the role of this Ministry as a commenting agency within the EA Review process. The Environmental Planning Branch undertakes the Ministry's technical review of EA matters and our comments are based on the requirements of the Environmental Protection Act, the Ontario Water Resources Act, and the Pesticides Act. This Ministry's technical areas of responsibility include air quality, groundwater effects, surface water effects, waste management/disposal issues, land use compatibility issues, and pesticides use. In some situations, the Energy Liaison and Planning Branch of this Ministry will also provide comments on the EA document which will be included in the technical review. The Environmental Assessment Branch comments on compliance with the Environmental Assessment Act.

We provide the following comments on the above noted EAP. I hope that these comments will be reflected in your final EAP, draft EA submission, if you prepare one, and in the formal EA submission.

COMMENTS

1. **Exhibit 11: Evaluation Criteria for the Bradford By-Pass** includes groundwater and surface water, highway and construction noise, property waste and contamination, stormwater quantity and quality, erosion, and sedimentation control as part of the evaluation criteria. The EAP indicates that the reasonable alternatives will be subject to a fairly detailed evaluation in order to select the preferred alternative. The EA report should include, in sufficient detail, a discussion of all relevant information on the existing conditions in the area, any known or anticipated problems, and a discussion of any mitigation or monitoring programs which are currently under way. With respect to the preferred alternative, the EA report should contain adequate detail on the existing conditions, existing problems, and positive and negatives impacts of the alternative on the existing environment. The report should also discuss any mitigation measures or monitoring programs which are to be considered as part of the preferred alternative.
2. As a general observation, this Ministry is concerned about the potential for further degradation of the environment as a result of any proposed undertaking. Where possible, the proponent is to incorporate appropriate measures to ensure that all impacts are within existing provincial guidelines and regulations. For example, any impacts on water quality should meet the Provincial Water Quality Objectives. In situations where the guidelines are already being exceeded, the proponent is to incorporate appropriate measures to ensure no further degradation of the system will result from the proposed undertaking. Sometimes, various measures may be proposed to improve the situation. The EA should be clear about how the proponent will be addressing these issues. The mitigative measures should be based on best management practices.
3. Staff note that the Groundwater, Surface Water, Highway and Construction Noise, and Property Waste and Contamination Evaluation Criteria in **Exhibit 11** do not include the ability to mitigate the impacts as part of the indicators. The ability to mitigate environmental impacts are often part of evaluating the alternatives. Furthermore, the various alternatives may have positive and beneficial impacts which may also be included in the evaluation. We suggest that the proponent include the ability to mitigate as indicators in the evaluation criteria for these factors. This is particularly important if the ability to mitigate the impacts influence the selection of the preferred alternative.
4. With respect to groundwater, the evaluation criteria appear to relate to "interference" of groundwater. Since groundwater interference normally refers to water quantity, explicit reference to groundwater quality should be specifically included in **Factor 2.5** of **Exhibit 11**.
5. **Factor 4.4** of **Exhibit 11** should specifically refer to waste disposal sites and decommissioning sites.

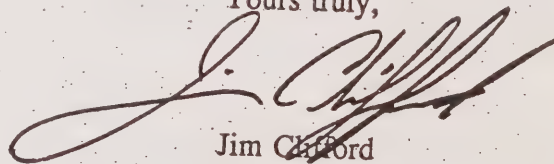
6. The EA report should also specify if pesticides are to be used in the maintenance and construction of the alternatives. If pesticides are to be used, the EA report should specify if a licence or a permit is required.
7. The proponent should be more definite about why the Bradford Bypass EA and the Highway 404 extension are considered two distinct projects. Section 8.2.1 indicates that MTO views the Bradford Bypass as dependent on the presence of an extended Highway 404 for an eastern terminus. While the contingency is to use Highway 48 as the eastern terminus if Highway 404 extension is not in place, the rationale for separating the projects should be more clearly defined in the EA report. If the projects are dependant then perhaps they should not be dealt with separately.
8. For Exhibit 12, the EAP identifies the Central Region office of MOEE in the External Team list. The correct contact is the Environmental Planning Branch of MOEE.
9. Section 8.3.4 Formal Approvals Required states that the "ministerial approval will incorporate any necessary conditions or commitments to obtaining any additional approvals required". Staff agree that the proponent should specify in both the draft EA submission and the formal EA submission the various certificates of approval, licenses or other approvals which will have to be obtained as part of the undertaking. However, even if an EA report or an approval for an EA does not specify all necessary approvals, the proponent must still obtain any and all approval or licenses which may be required. Approvals under the EA Act do not exempt proponents from other legislative requirements. The proponent is responsible for ensuring that any works or activities which require additional approvals or licenses under other legislation must be obtained as necessary.
10. The EAP recognizes that the planning process for the proposed EA undertaking is iterative and allows for feedback into the decision making process. Information or data obtained during the environmental assessment process may warrant the proponent reviewing earlier decision making points. The EAP acknowledges this as part of planning the EA.
11. Section 9.0 Proposed Public and Agency Consultation states that the EAP is an opportunity for agencies to review and comment on the proposed study process, technical analysis and public consultation. Generally, EAPs do not contain (nor are they intended to contain) sufficient detail on the technical analysis for an adequate assessment of the impacts. However, the draft EA document should contain sufficient information on the technical analysis for staff to provide specific technical comments.
12. Exhibit 13, in the MTO Review Process/ Environmental Assessment Review should read "concurrent agency/public EA review process".
13. Section 9.2.4, Formal Public Review, indicates that MOEE will provide 45 days for comments and 15 days for comments. More correctly, the EA process provides for 45 days and 15 days for commenting. Furthermore, the last paragraph should read "If it is felt by the Minister of the Energy and the Environment that serious environmental concerns".

14. As a point of clarification, it is the Minister of the Environment and Energy who will decide on the approval of the EA submission. The last line of Section 10 of the EAP should be revised accordingly.
15. Section 11.0, Supporting Studies is a preliminary list of studies that will be included in the EA report. Staff can not adequately assess from lists of studies if the EA report will contain sufficient information on the impacts that the proposed undertaking may have on noise levels, air quality, groundwater effects, surface water effects, waste management/disposal issues, land use compatibility issues, and pesticide use. Nor can staff comment on whether or not additional studies or mitigation will be required in the EA submission. We will be able to provide more detailed comments at the draft EA stage when the EA and supporting documentation are submitted for review.
16. Exhibit 14 should be revised to include MOEE as an agency likely to be concerned with groundwater, surface water, and contaminated soils. We note that the proponent will have to contact our regional office to review well records in the area. All references to MOE in Exhibit 14 should be updated to read MOEE.

The above noted comments are limited to the information provided by the proponent in the EAP. We will be pleased to review a draft EA report should you prepare one. If a draft EA report is prepared, the Environmental Planning Branch will require 8 copies of the report for circulation to the technical reviewers. The MOEE technical reviewers will comment on the EA document based on how concerns within our mandated areas of responsibility have been addressed.

Thank you for the opportunity to participate in the review of the EAP. If you have any questions, please contact Elizabeth Janz, the Technical Review Coordinator for this project, at (416)440-6986.

Yours truly,



Jim Clifford
Supervisor

cc. G. Casonato
MOEE Central Region

~~Mr. C. Rickards~~
Cole, Sherman & Associates Ltd.

G. Higgins
EA Branch



Ontario

Ministry
of the
Environment
and Energy

Ministère
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et de l'Énergie

250 Davisville Avenue
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June 15, 1993

440-3492

Mr. Chris Ricketts, P.Eng.
Consultant Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Dear Mr. Ricketts:

RE: Environmental Assessment Proposal (EAP)
Highway 404 Extension Davis Drive to
North Junction of Highways 7/12 (June 1993)

I have reviewed the above-noted document in accordance with the *Guideline for Preparing Environmental Assessment Proposals*, prepared by the Ministry of Environment and Energy, Environmental Assessment Branch, and offer the following comments.

The document is clear and easy to understand, and serves to provide the reader with a solid context in which to view this particular project. The draft EAP appears to meet all the requirements of the guideline, however, I would like to mention a few possible changes.

• page 10, Section 2.4

You indicate that the objectives of the previously mentioned studies were widely accepted and endorsed by all approval/review bodies and can therefore be reused where applicable in the current study.

Other proponents have asked us about the use of previous work in current EA studies. Our advice has always been that if it can be demonstrated that the previous studies would conform to the 5 Key Features of successful EA Planning (as found in the *Interim Guidelines on Environmental Assessment Planning and Approvals* - MOEE 1989) then the conclusions of those studies can be used. Notwithstanding Section 2.4.5, if the previous studies did not meet this requirement, then their use should be discussed with branch staff and certain caveats may be applied. Given that the Environmental Assessment Board is not bound by previous decisions (eg. 1981 decision) I would caution you to accept that direction in light of the current EA process. A great deal of change has occurred both in government and with the public over the last twelve years.

COPY





Ontario

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

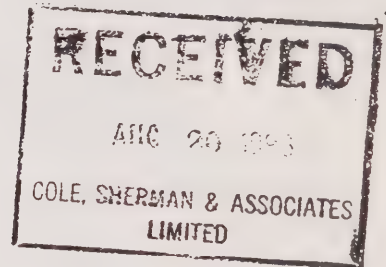
Mineral Sector Analysis Branch
159 Cedar Street, 4th Floor
Sudbury, Ontario P3E 6A5

Tel: (705) 670-7241

Fax: (705) 670-7231

August 17, 1993

Mr. Chris Ricketts, P. Eng.
Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, ON
L3T 7N9



Dear Mr. Ricketts:

Re: Highway 404 Extension Environmental Assessment Study
Davis Drive to the North Junction of Highways 7/12

This is in reply to your letter of July 28, 1993 addressed to Rob Milligan, which has been passed to me for reply.

The information required to respond to your questions rests with our Resident Geologist for the area, Bern Feenstra, and by copy of this letter I am asking him to reply directly to you. I am also forwarding to him a copy of your letter and the accompanying map.

Should you wish to contact him directly on this matter, his phone number is 519-661-2773, and his fax number is 519-661-2809.

Yours truly,

P. E. Giblin, P. Eng.
Manager, Land Use Planning
Mines and Minerals Division

cc: Don Ignacy
Bern Feenstra, Resident Geologist, MNDM,
PO Box 5463, 659 Exeter Road,
London, ON
N6A 4L6

APPENDIX 7.B MUNICIPAL TEAM



THE CORPORATION OF

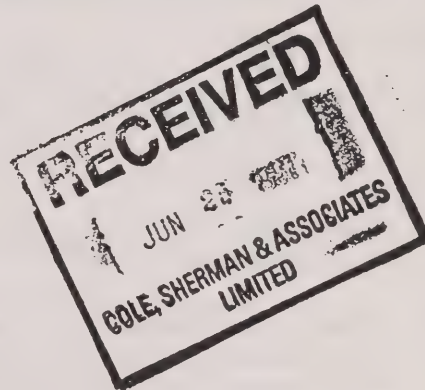
THE TOWNSHIP OF BROCK

IN THE REGIONAL MUNICIPALITY OF DURHAM

1 CAMERON ST. E., P.O. BOX 10, CANNINGTON, ONTARIO L0E 1E0 (705) 432-2355

June 20, 1997

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Ministry of Transportation, Ontario
1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8



Dear Sir:

Re: Highway 404 Extension
Township of Brock
Region of Durham

Further to my attendance at your public consultation session held in Pefferlaw on June 5, 1997 please be advised that a staff report was considered by Council on June 16, 1997. The purpose of this report (copy enclosed) was to summarize the route refinements presented at the open house and to raise certain questions for Council's information.

Council received the above-mentioned staff report and adopted a resolution requesting that the interchange design proposed for the south junction of Hwy 12/48 be forwarded to Mr. G. Dales encouraging the Hwy 12/48 corridor study group to incorporate the same interchange design to ensure that this intersection would be treated consistently within each study. A copy of my correspondence to Mr. Dales is enclosed as well.

In addition, Council requested confirmation from your office that those persons with vacant properties fronting the existing Highway 48 with no other means of frontage would not be precluded from securing access onto the "transition" highway proposed. Council also requested confirmation that, in the event that this portion of the 404 were to become a closed access freeway, the MTO would construct service roads to accommodate property owners on each side of the highway. Please refer to the discussion contained on page 2 of report 97-Council-11.

Further, I am enclosing correspondence from two of our ratepayers expressing concern with the proposed alignment of the 404; these

individuals believe that the alignment of the 404 should be placed to the north in the vicinity of Concession 2/3, Thorah because the impacts would not be as severe. Council received their correspondence for information and directed that it be forwarded to you for your information and action.

I trust that Council's concerns and requests will be appropriately addressed by your study team and I would appreciate receiving a written response to the foregoing. Should you have any questions please do not hesitate to contact me.

Yours truly,

THE TOWNSHIP OF BROCK

T.G. Gettinby, MCIP, RPP, AMCT(A)
Township Planner

cc. Clerk's File
C. Ricketts, Cole Sherman
Regional Planning Dept.
Regional Works Dept.

The Corporation of the Township of Brock

Planning Department

Township Planner to the Mayor & Members of Council

Report: 97-COUNCIL-11

Date: Monday, June 16, 1997

SUBJECT

HIGHWAY NO. 404 EXTENSION
TECHNICALLY PREFERRED ROUTE & REFINEMENTS
PUBLIC CONSULTATION SESSION 5 - JUNE 5, 1997
STATUS REPORT/UPDATE

RECOMMENDATION

1. THAT this report be received for the information of Council.
 2. THAT the concerns with respect to access to the highway and the Highway 12/48 junction identified be forwarded to the MTO, the associated consultants, and the M.P.P.
-

REPORT

- Attachment No. 1: Route Alternatives Proposed by MTO
2: Route Selection Rationale

Purpose

The purpose of this report is to provide Council with an update on the status of the Highway 404 extension project being undertaken by the Ministry of Transportation, Ontario. The Ministry has made a number of changes in the design of the highway within the municipality since November, 1996; these will be highlighted. In addition, the report will address issues such as existing accesses, property acquisition, the Highway 12/48 junction, and the next steps in the process.

Route Refinements

- Contrary to the brochure forwarded by MTO and received by Planning Committee on May 26, 1997, a full service interchange (east and west bound) continues to be proposed at Durham Road # 23. The Committee will recall that our suggestion to place the interchange at the Brock/Thorah Townline was rejected by MTO on traffic engineering principles.
- The "Port Bolster" interchange will be located north of the 13th Concession in between those properties designated and zoned for industry. In addition, the MTO is proposing a connector road from Durham 23 to Brock Road to eliminate the jog which will be created for vehicles exiting the 404 eastbound en route to Brock Road.
- A partial interchange (westbound only) will be constructed within the Town of Georgina at York Road 21 (Pefferlaw) to the south of the existing Highway 48 corridor. This will facilitate traffic from this area commuting to south York Region/Metro Toronto.
- The "transition" highway proposed within Brock has been modified to accommodate a 15 metre grassed median strip to the

terminus with Highway 12. This will simulate a full freeway except that access (road and private entrances) will be permitted together with a narrow median (vs. 30 metres).

- A right turn only will be permitted for all private entrances along this section as well as Sideroad 17 - South (Dump road) and Concession 1 - Thorah (Townline). The median will be broken at Concession 14 and Sideroad 17 - North to allow for a left hand and "U" turns along this section.
- The existing Highway 48 roadway will be terminated to the east of the bend at Port Bolster as the 404 will be situated within and on top of the existing highway right-of-way.
- The design of the terminus at Highway 12 remains uncertain at this time due to the status of the Highway 12/48 corridor study. The 404 study has made certain assumptions with respect to designing an interchange; at present, a full cloverleaf interchange has not been proposed in favour of the following:
 - northbound 404 traffic will follow a left curve onto Highway 12
 - southbound 12/48 to 404 westbound will follow the same curve onto the 404
 - 404 to southbound 12 traffic will exit to a "T" intersection at the existing lights
 - northbound 12 to the 404 westbound traffic will travel onto an overpass and follow a tight curve onto the 404
 - southbound 12/48 to 12 traffic will travel onto the overpass and travel straight through to merge onto Highway 12
 - northbound 12 to 12/48 traffic will essentially follow the same alignment as what presently exists

Existing Accesses

Ministry staff and consultants have advised that persons with existing field and residential access onto Highway 48 will continue to enjoy same. However, upgrades of field access to residential or residential to commercial will require further review by the MTO corridor office. Council should note that new accesses being granted to the highway will be very unlikely given the intended function of the roadway and its potential for full freeway status in the event the 404 is extended north to Gravenhurst.

One issue raised by staff at the open house is that there are five (5) vacant legal lots of record fronting Highway 48; the Ministry advised that applications for access would have to be considered through the relevant Corridor office. Open house staff appeared to be hesitant on whether access for these properties would be granted; Council may wish to advise the Ministry of the implications of landlocking a legally-existing lot of record. In addition, despite the fact that the highway is to terminate at the 12/48 junction, Council may also wish to request that the Ministry provide service roads in the event that access to the highway is closed in the future.

Property Acquisition

Contrary to all previous indications with respect to the use of the existing right-of-way the Ministry must purchase additional lands on the east side of the road on the Port Bolster bend and the north side east of the bend in order to accommodate the proposed alignment. In addition, the MTO will be faced with the purchase of at least one property with a single-detached dwelling on the northwest corner of the existing 12/48 intersection.

Highway 12/48 Junction

The MTO 404 study has proposed a partial interchange at this

junction as opposed to a full interchange. This is due, in part, to the status of the Highway 12/48 corridor study in that there is a time lag in each study. However, it would appear as though both studies, on a preliminary basis, have assumed that Highway 12/48 north of the junction will be a 4 lane highway. The 404 study has proposed that one property owner will be displaced as a result of the present interchange configuration. To minimize further uncertainties for this and other property owners, it is recommended that each study group meet to resolve this issue and design a terminus which will accommodate the interests of each party.

Resident Concerns

The proposed alignment of the interchange at 12/48 will displace at least one residential property owner. One property owner has reviewed this issue with Regional Councillor Clayton advising that it would be preferable to address this issue in conjunction with the Highway 12/48 corridor study. This request is made to ensure that the recommendations for this intersection within each study are consistent. As discussed above, in the event this route is the chosen alignment, it is recommended that the 12/48 corridor study be apprised of the 404 study's recommendation. It must be recognized, however, that land purchases, etc. will not occur until such time as the recommended alignment has been approved by Cabinet; this is not likely to occur in the immediate future.

Other residents have expressed written and verbal concerns with respect to the use of the existing Highway 48 right-of-way for the 404 alignment. One resident, Mr. A. Ross, has suggested that the alignment should be located to the north in between Concession Road Nos. 2 & 3, Thorah where it would promote the least amount of impact. The undersigned has discussed this issue with Mr. Ross and advised that a number of factors are considered in the routing of a freeway inclusive of environmental, heritage, land use, agricultural, and financial impacts, social, historical, noise, and wildlife impacts. The following provides an explanation as to the rationale used by the 404 study group for selecting the preferred alternative.

Attachment No. 1 illustrates the route alternatives presented in 1995 parallel to Highway 48 together with the widening of Highway 48. Attachment No. 2 contains extracts from a document entitled Route Analysis & Evaluation, October 1996. Council will note that D2E was preferred over D2C. Route D2D, located just north of the existing highway, was preferred over D2E for reasons of lower agricultural and social environmental impacts which, collectively, would off-set any negative natural environmental impacts.

The selected Route D2D was then compared to the widening of Highway 48. The result of this analysis revealed that the widening of 48 was preferred because it produces lower impacts and greater overall benefits than Route D2D. These comparisons were made on the assumption that the highway would be a closed access freeway. The fact that the highway is now proposed for limited access may add further justification for the use of the existing Highway 48 corridor. Notwithstanding, it is understood that these residents have discussed their concerns with the study group staff as part of the public consultative process.

Future Direction

The timetable for completion of this project consists of finalizing the preferred route alignment during the summer of 1997. This will be followed by the preparation and submission of the Environmental Assessment Report to the Ministry of Environment & Energy. It is expected that this document will be filed this winter or early spring 1998. Council should note that the process provides for comments on the EA report inclusive of the opportunity to request a "bump-up" to a full environmental hearing.

Assuming that there is no request for a "bump-up" and the Minister of Environment & Energy approves the EA document, the Ministry of Transportation may then apply to Cabinet for an Order to formally designate and protect the highway alignment. This would include the ability to freeze all development along the highway until such time as it is required for construction.

With respect to construction timing Ministry staff have advised that there is no timetable. However, Council should note that there is an ever-increasing demand for a freeway facility in the Town of Georgina to service those residents of Keswick and Sutton. Beyond these communities and into Brock the demand is not as prevalent.

Respectfully submitted,



T.G. Gettinby, MCIP, RPP, AMCT(A)
Township Planner

97COUN11

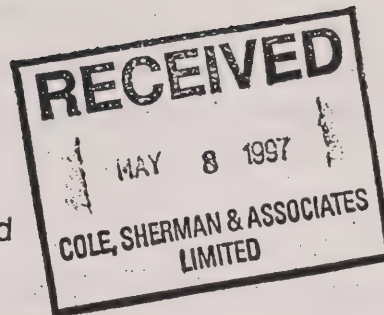


The Regional
Municipality
of Durham
Clerk's Department

605 Rossland Rd. East
P.O. Box 623
Whitby, Ontario
Canada L1N 6A3
(905) 668-7711
Fax: (905) 668-9963

C. W. Lundy A.M.C.T.
Regional Clerk

April 30, 1997



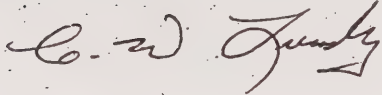
Mr. C. Ricketts
Consultant Project Manager
Cole, Sherman & Associates Limited
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Highway 404 Extension Environmental Assessment Study
Our File: E03-02

Mr. Ricketts, the Planning Committee of Regional Council considered the above matter and at a meeting held on April 23, 1997, Council adopted the following recommendations of the Committee:

- "a) THAT the technically-preferred route for the Highway 404 extension, from Davis Drive to the south junction of Highways 12 and 48, be endorsed;
- b) THAT the Ministry of Transportation be requested to modify the design for the south junction of Highways 12 and 48, as proposed in the Highway 404 Environmental Assessment Study, to ensure that Type A arterial road operating standards are maintained on these facilities; and
- c) THAT a copy of Commissioner's Report #97-P-54 be forwarded to the Ministry of Transportation, the Township of Uxbridge, the Township of Brock, the Region of York, Ms. J. Munro, MPP Durham-York, and Mr. C. Ricketts, P.Eng., Cole, Sherman and Associates Limited."

Enclosed for your consideration is a copy of Report #97-P-54 of Mr. A.L. Georgieff, Commissioner of Planning.



C.W. Lundy, A.M.C.T.
Regional Clerk

CWL/db
Encl.

cc: Mr. S. Jacobs, MTO Project Manager
Mr. W.E. Taylor, Clerk, Township of Uxbridge
Mr. G.S. Graham, Clerk-Administrator, Township of Brock
Mr. D. Hearse, Clerk, Regional Municipality of York
Ms. J. Munro, M.P.P. (Durham-York)
Mr. A.L. Georgieff, Commissioner of Planning



Planning Department
Commissioner's Report to Planning Committee
Report No. 97-P-54
Date: April 15, 1997

SUBJECT

Highway 404 Extension Environmental Assessment Study - Technically-Preferred Route, File: 4.1.3.20

Highway 12 Preliminary Design Study, File: 4.1.3.36

Correspondence No. 96-523, dated November 18, 1996, from Mr. C. Ricketts, P. Eng., Cole, Sherman and Associates, Limited

Correspondence No. 97-091, dated February 13, 1997, from Mr. D. Hearse, Regional Clerk, Region of York

RECOMMENDATIONS

1. THAT the technically-preferred route for the Highway 404 extension, from Davis Drive to the south junction of Highways 12 and 48, be endorsed;
 2. THAT the Ministry of Transportation be requested to modify the design for the south junction of Highways 12 and 48, as proposed in the Highway 404 Environmental Assessment Study, to ensure that Type A arterial road operating standards are maintained on these facilities; and
 3. THAT copies of Commissioners Report 97-P-54 be forwarded to the Ministry of Transportation, the Township of Uxbridge, the Township of Brock, the Region of York, Ms. J. Munro, MPP Durham-York, and Mr. C. Ricketts, P.Eng., Cole, Sherman and Associates, Limited.
-

REPORT

1. Purpose of this Report

1.1 This report:

- presents the technically-preferred route for the proposed Highway 404 extension;
- examines the implications of the route on Durham Region; and
- provides an update on the Preliminary Design Study (PDS) being conducted by the Ministry of Transportation (MTO) for Highway 12, between its north and south junctions with Highway 48¹.

2. Highway 404 Technically-Preferred Route

- 2.1 MTO initiated the Highway 404 Environmental Assessment study (Highway 404 EA) in 1993 to determine the need for and location of a Highway 404 extension, from Davis Drive in York Region to the north junction of Highways 12 and 48 in Durham Region. The Highway 404 extension is proposed to accommodate future commuter and recreational travel demands south of Lake Simcoe.
- 2.2 Study progress has previously been reported to Planning Committee on April 18, 1995 (95-P-43) and September 5, 1995 (95-P-82). Through Commissioner's Report No. 95-P-82, Regional Council advised MTO that the Region preferred a northerly alignment for the Highway 404 extension, from a transportation planning and land use perspective. The Region's preferred corridor is illustrated in Attachment 1.
- 2.3 On October 15, 1996, MTO presented the technically-preferred route for the Highway 404 extension, illustrated in Attachment 2, to a joint meeting of Planning and Works Committees. The technically-preferred route consists of

¹ Highway 48 intersects Highway 12 at two locations in Durham. The highways intersect at a southerly location, north-west of Cannington (*south junction*), and at a northerly location, just south of the Talbot River (*north junction*).

a controlled access freeway between Davis Drive and Lakeridge Road (Regional Road 23), and a "transition section" between Lakeridge Road and the south junction of Highways 12 and 48. A freeway corridor north of the south junction of Highways 12 and 48 is not proposed at this time, since forecasted commuter travel demands are insufficient to warrant a freeway. In addition, opportunities to protect land for a facility in this area are not being compromised by development, as they are in York Region.

- 2.4 The public was invited to comment on the technically-preferred route at open houses held from November 12 to 19, 1996 in Pefferlaw, Egypt, and Sharon. Approximately 600 people attended the sessions. The comments received at the open houses, which were recently provided by MTO, focussed on property, noise and natural environment concerns, especially in the area around Pefferlaw. However, many in attendance supported the technically-preferred route, and recognized the need to construct the facility at the earliest opportunity.
- 2.5 On October 24, 1996, the Region of York Council adopted a motion endorsing the Highway 404 EA and advised that York was willing to cooperate towards the early implementation of the extension. On January 30, 1997, York Council adopted a subsequent motion (Attachment 3) to initiate discussions with MTO, together with the Towns of Newmarket, East Gwillimbury and Georgina, to identify options for partnering in the staged implementation of the Highway 404 extension.

3. Implications on Durham Region

- 3.1 The technically-preferred route proposed for the Highway 404 extension, between Davis Drive and the south junction of Highways 12 and 48, follows the Region's preferred corridor, and should be endorsed by Regional Council. However, the Highway 404 EA proposes the reconfiguration of the south junction of Highways 12 and 48, to provide for continuous traffic movement between Highway 12 north of the junction and the future Highway 404 extension. The configuration, illustrated in Attachment 4, would introduce a left turn at the south intersection of Highways 12 and 48. This is not

appropriate for Highway 12, which is designated as a Type A arterial in the Durham Regional Official Plan.

- 3.2 To maintain a Type A level of service, a grade-separated interchange will be required at this intersection. Attachment 5 illustrates an alternative design, which would provide for uninterrupted traffic flow on Highway 12, and would maintain the Type A arterial operation. The configuration improves northbound service through a higher speed ramp, and southbound operations through a grade separation and ramps on the north side of Highway 48. Recent discussions with MTO suggest they are reconsidering the need for an interchange at this location.

4. Highway 12 Preliminary Design Study

- 4.1 Independent of the Highway 404 EA, MTO has initiated a Preliminary Design Study (PDS) to identify a solution to existing traffic operation and safety concerns in the Highway 12 corridor, between the south junction of Highways 12 and 48 and the Durham Region/Simcoe County boundary. Increasing commercial traffic volumes, in addition to high seasonal travel demands, necessitated this study.
- 4.2 Preliminary analysis suggests a widening, with localized operational/safety improvements, is needed for the portion of Highway 12, between its north and south junctions with Highway 48. This solution is consistent with the provisions of the Durham Regional Official Plan for a Type A arterial road.
- 4.3 The preliminary analysis was presented to the Township of Brock Council on November 4, 1996. Brock Council was generally in agreement with the preliminary recommendations, but expressed concern about increasing volumes resulting from aggregate truck traffic and Casino Rama. A Public Consultation Session (PCS) was also held on November 21, 1996 at the Beaverton-Thorah Community Centre, to solicit public comment. The public generally supported the recommendation to improve Highway 12, citing safety concerns at Thorah Central Public School, existing and future side road access, and increasing traffic volumes.

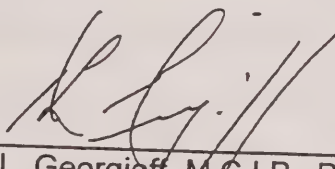
- 4.4 MTO is currently considering alternative designs for widening Highway 12, which will be presented at a second PCS. The date for this session has not been established. As the likely solutions will be operational in nature, the Planning Department is not expecting to report further on the Highway 12 PDS to Planning Committee, provided the Type A arterial function is maintained.

5. Conclusions

5.1 In conclusion:

- the technically-preferred route for the Highway 404 extension, from Davis Drive to the south junction of Highways 12 and 48, should be endorsed; and
- MTO should be requested to modify the design for the south intersection of Highways 12 and 48, proposed through the Highway 404 EA, to ensure Type A arterial road operating standards are maintained.

- 5.2 This report has been discussed the Regional Works Department, who concur with its contents. This report should be forwarded to MTO as the Region's comments on the technically-preferred route for the Highway 404 extension, in accordance with the request from MTO's consultant, Cole, Sherman and Associates, which is provided as Attachment 6.




A.L. Georgieff, M.C.I.P., R.P.P.
Commissioner of Planning

- Attachments: 1 - Region's Preferred Corridor for the Highway 404 Extension
2 - Technically-Preferred Route for the Highway 404 Extension
3 - Correspondence dated February 13, 1997 from Mr. D. Hearse, Regional Clerk, Region of York

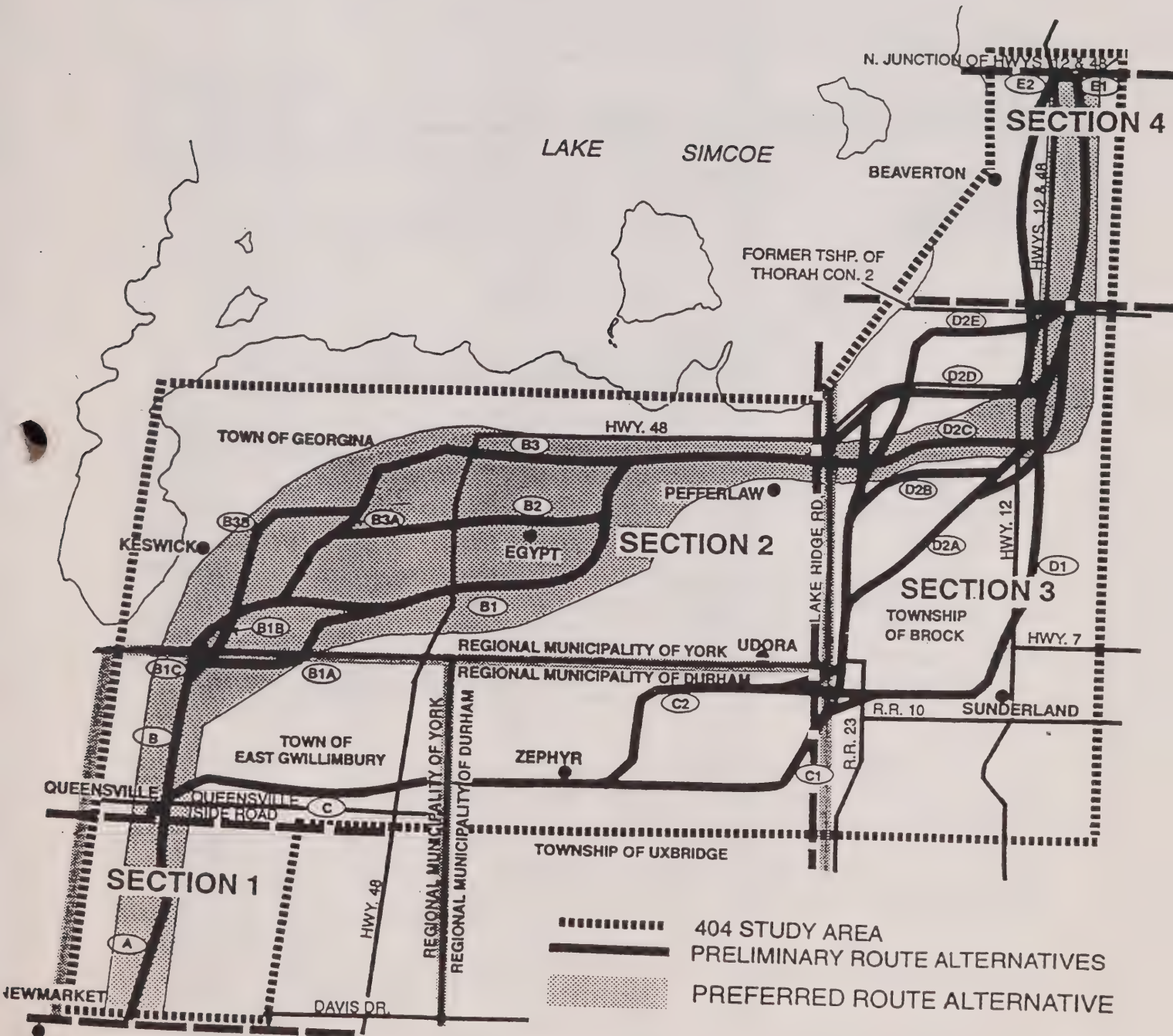
- 4 - Intersection Design Proposed for the South Junction of Highways 12 and 48 in the Highway 404 EA
- 5 - Alternative Interchange Design for the South Junction of Highways 12 and 48
- 6 - Correspondence dated November 13, 1996 from Mr. C. Ricketts, P.Eng., Cole, Sherman and Associates, Limited

RECOMMENDED FOR PRESENTATION TO COMMITTEE


G.H. Cubitt, M.S.W., C.A.O.
N:\TRA\BIE\H404\H404CR1.WPD

ATTACHMENT 1

Region's Preferred Corridor for the Highway 404 Extension



TECHNICALLY PREFERRED
ROUTE

LEGEND

STUDY AREA LIMIT

INTERCHANGE LOCATIONS



HIGHWAY 404 EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

EXHIBIT

Ontario
Ministry of Transportation



January 17, 1997
Our Ref.: 6891

Township of Brock
1 Cameron Street East
P. O. Box 10
Cannington, Ontario
L0E 1E0

Attention: T. G. Gettinby, Township Planner

Dear Sir:

RE: **Highway 404 Extension Environmental
Assessment -Davis Drive to Highway 12**

Thank you for your letter of December 5, 1996, regarding the above project. In response to your request for consideration of the relocation of the proposed interchange at Durham Road 23 easterly to the area of the intersection of Brock/Thorah Town Line and Highway 48, we offer the following comments.

In general, an interchange should preferably be located at principle roads recognized as major components in the road system which have good continuity and a capability for expansion, if required. As well, spacing of interchanges must also be considered, due to the potential effect of spacing on the operation of the highway. Interchanges spaced too closely increase costs and generate operational concerns associated with the weaving distances provided. Interchanges spaced too far apart may cause the local road network to break down and/or create significant out-of-way travel.

Our proposed location for the interchange at Durham Road 23 serves the east limit of the Town of Georgina, including the communities of Pefferlaw and Udora, and the west limit of the Township of Brock, including the communities of Port Bolster and Beaverton via a continuous (north and south) principle road. Under this scenario, the projected peak directional traffic volume on Durham Road 23 through Port Bolster during weekday peak periods is approximately 500 vehicles (in Year 2021). This volume is significantly less than the current directional capacity of approximately 800 vehicles per hour for this section of roadway .

Locating the interchange where the Brock/Thorah Townline intersects with Highway 48 creates several transportation and environmental concerns:

1. Regional Road 23 is not continuous south of Highway 48 at the Townline; an interchange at this location would not provide direct access to the area south of Highway 48; limiting accessibility to lands north of Highway 48 reduces the benefits to the area transportation network.

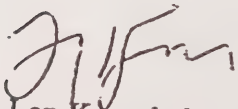
2. An interchange at the Townline would likely be considered too far out of the way for Pepperlaw traffic; re-routing this traffic to other parts of the network reduces transportation benefits to the road network and reduces the cost-effectiveness of the Road 23 interchange.
3. An interchange at the Townline would require extending the controlled access freeway an additional four kilometres to the proposed interchange location; this extension would increase costs, property impacts and reduce transportation benefits (through increased out-of-way travel) in the area of the extension.
4. Essentially such an interchange would be between Highway 404 and two roads (an east-west road and a north-south road) which do not actually cross Highway 48 at the proposed location; to accommodate all possible turning movements, a very complex interchange would be required, which would create operational and safety concerns.
5. This interchange would be situated in an environmentally sensitive area (west end of the Gibson Hill Swamp) and would increase impacts to the local natural environment.

An interchange at Durham Road 23 south of Highway 48 generates lower overall impacts and provides a greater transportation benefit to the area road network than an interchange at the Townline. In consideration of the above, we therefore are not recommending an interchange at the Brock/Thorah Townline.

We trust this information is satisfactory. If you have further comments, or require additional information, please feel free to contact us.

Yours very truly,

COLE, SHERMAN & ASSOCIATES LTD.



Len Kozachuk, P. Eng.
Consultant Project Engineer

LK/lk

cc: S. Jacobs - MTO
H. Pearson - MTO



TOWN OF GEORGINA

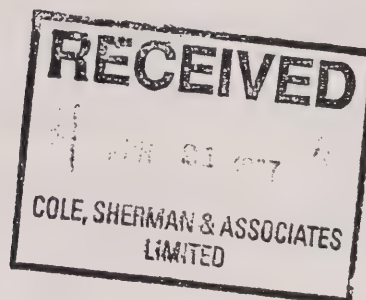
OFFICE OF THE CLERK

26557 Civic Centre Rd., R.R. #2, Keswick, Ontario L4P 3G1

6891
Direct Lines:
(905) 476-4305
(905) 722-6518

April 17, 1997

Ministry of Transportation of Ontario,
3rd Floor,
Ferguson Block,
77 Wellesley Street West,
TORONTO, Ontario
M7A 1Z8



Attn: The Honourable Al Palladini,
Minister

Honourable Minister:

Town Council, at its meeting held on April 14, 1997, considered Report No. DPW-97-17 of the Town Engineer concerning road closures for Highway 404 and passed the following motion:

1. THE MINISTRY OF TRANSPORTATION OF ONTARIO IS ADVISED THAT THE TOWN OF GEORGINA EXPECTS THE MINISTRY TO HONOUR THE COMMITMENT GIVEN AT THE COMMITTEE OF THE WHOLE MEETING OF OCTOBER 21, 1996, WHICH WAS THAT BRIDGES WOULD BE PROVIDED WHERE THE PROPOSED HIGHWAY 404 CROSSES GLENWOODS DRIVE AND MCCOWAN ROAD AND ACCORDINGLY DOES NOT SUPPORT THE CLOSURE OF THESE TWO ROADS.
2. THAT AN INTERCHANGE AT EITHER PEFFERLAW ROAD OR WEIR'S SIDEROAD, AT THE PROPOSED HIGHWAY 404, MUST BE PROVIDED TO SERVICE THE RESIDENTS AND BUSINESSES OF PEFFERLAW; BY-PASSING PEFFERLAW WILL HAVE SERIOUS AFFECTS ON THE ECONOMIC HEALTH OF THE COMMUNITY.

... 2

- Page 2 -

I have enclosed a copy of Report No. DPW-97-17 for your reference, which outlines the background information pertaining to the above motion and the reasons Glenwoods Drive and McCowan Road should not be closed. We respectfully request that you give consideration to this important issue.

Sincerely,

FOR THE TOWN OF GEORGINA,

A handwritten signature in cursive script, appearing to read "Carolyn Lance".

Carolyn Lance,
Committee Secretary

cl

cc: Steve Jacobs, MTO
Len Kosachuk, Cole Sherman
Bob Magloughlen, Town Engineer

MINUTES OF MEETING

DATE: January 14, 1997 **TIME:** 12:00 p.m.

OUR REF.: 6891

LOCATION: Town of East Gwillimbury Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: W. Hunt - East Gwillimbury - Engineering
S. Jacobs - MTO
L. Kozachuk - CSA

PURPOSE: Highway 404 Extension - Road Crossings and Closings

The Technically Preferred Route for the extension of Highway 404 was selected and presented to municipal councils and the public (through public consultation sessions) at the end of 1996. Interchange locations were also identified with the Technically Preferred Route.

The Concept Design is now in progress, which will include grade separations and road closings. This meeting was held to discuss proposed road crossings and closings in the Town of East Gwillimbury with the proposed extension of Highway 404. A listing of proposed road crossings and closings (see attached) was forwarded to W. Hunt prior to this meeting for consideration.

Mount Albert Road

Mount Albert will be grade separated at the crossing of Highway 404. W. Hunt commented that while an interchange at Mount Albert Road may have been considered essential at one time, the proposed interchange at Herald Road and the improvements proposed for Green Lane significantly reduce the need for an interchange on Mount Albert Road.

Farr Avenue

The proposed highway will close Farr Avenue approximately 500 metres west of Woodbine Avenue. Farr Avenue does not continue east of Woodbine Avenue, and the eastern portion of Farr Avenue where the closing is proposed is a low-volume road (1996 AADT = 800 vehicles). At present, there are road connections between Farr Avenue and Mount Albert Road (which will be grade separated at Highway 404) which would provide alternate access to Woodbine Avenue.

Doane Road

A grade separation is proposed at the Doane Road crossing of Highway 404. Projected traffic volumes (excluding the Queensville Community Plan) warrant a two-lane structure at this crossing. If the Queensville Community Plan obtains approval, however, the Town could presumably request that any development associated with the Plan incorporate the cost and property requirements to upgrade the grade separation and construct an interchange, if required.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

COLE, SHERMAN & ASSOCIATES LTD.

75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399

Internet: colesher@idirect.com

Holborn Road

Holborn Road is proposed to be closed at the crossing of Highway 404 primarily to avoid constructing structures for the ramps of the Highway 404/Bradford Bypass interchange. Property impacts and construction costs would be reduced if Holborn Road was closed at Highway 404.

Holborn Road is a very low volume road (1996 AADT = 200 vehicles) and alternate access between Woodbine Avenue and Leslie Street would be provided by Queensville Sideroad (interchange proposed at Highway 404) and Boag Road (grade separation proposed at Highway 404).

W. Hunt will be preparing a report for Council's information discussing the above issues. Any comments received from the report will be forwarded to the Highway 404 Project Team.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: Those Present

MINUTES OF MEETING

DATE: January 14, 1997 **TIME:** 10:00 a.m.

OUR REF.: 6891

LOCATION: Town of Georgina Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

B. Magloughlen	-	Georgina - Engineering
H. Lenters	-	Georgina - Planning
S. Jacobs	-	MTO
L. Kozachuk	-	CSA

PURPOSE: Highway 404 Extension - Road Crossings and Closings

The Technically Preferred Route for the extension of Highway 404 was selected and presented to municipal councils and the public (through public consultation sessions) at the end of 1996. Interchange locations were also identified with the Technically Preferred Route.

The Concept Design is now in progress, which will include grade separations and road closings. This meeting was held to discuss proposed road crossings and closings in the Town of Georgina with the proposed extension of Highway 404. A listing of proposed road crossings and closings (see attached) was forwarded to B. Magloughlen prior to this meeting for consideration.

Two Town of Georgina roads are proposed to be closed at the extension of Highway 404: Glenwoods Avenue and McCowan Road (7th Concession).

Glenwoods Avenue

B. Magloughlen noted that a landfill is situated at the northwest corner of Warden Avenue and Ravenshoe Road. This landfill which serves the western portion of Georgina and Keswick, is scheduled to be converted to a waste transfer station. Presently, there is heavy truck traffic along Glenwoods Avenue due to trucks traveling between the landfill and Keswick/Roches Point.

Closing Glenwoods Avenue would require that trucks traveling between Keswick/Roches Point and the landfill/transfer station utilize Woodbine Avenue/ Ravenshoe Road or Warden Avenue. This was not considered a major impact to the operations of the transfer station.

H. Lenters noted that closing Glenwoods Avenue would discourage demand for the development of lands east of the highway.

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75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399

Internet: colesher@idirect.com

The Town could seek to protect sufficient property at the crossing of Highway 404 to accommodate a grade separation. Should long-term (20 years +) development needs warrant a grade separation at Glenwoods, it would then be possible for the Town to construct a grade separation on Glenwoods as part of the conditions of approval of such development.

McCowan Road

McCowan Road is scheduled to be paved from Ravenshoe Road northerly to Baseline Road over the next several years. The present traffic volume is approximately 700 vehicles per day, and this volume could be expected to increase once the paving of McCowan Road is completed. This traffic is generally long-distance through traffic which will be served by the interchange at Highway 48 once the extension of Highway 404 is completed to Highway 48.

At Country Mile Lane, McCowan Road is less than a kilometre west of Catering Road. By providing a grade separation at Catering Road, the road connection between Elm Grove and Sutton will be maintained.

McCowan Road does not continue north of Baseline Road (and there are currently no plans to extend the road northerly); Baseline Road and Country Mile Lane provide access to Kennedy Road which will have a grade separation at Highway 404. It is unlikely, therefore that closing McCowan Road would create a significant impact to the local road network. It was noted, however, that McCowan is a "historical" concession road and its closing would introduce a degree of impact to the local road network.

The Town could seek to protect sufficient property at the crossing of Highway 404 to accommodate a grade separation. Should long-term (20 years +) transportation needs warrant a grade separation at McCowan, it would then be possible for the Town to construct a grade separation on McCowan to improve the local transportation network.

Pefferlaw

Some discussion was held on the proposed access to Pefferlaw. The current proposal provides an interchange at Durham Road 23, which serves the eastern limit of Georgina, including Pefferlaw and Udora and western Brock Township, including Port Bolster and Beaverton. A grade separation is proposed for Pefferlaw Road (York Road 21).

B. Magloughlen and H. Lenters commented that an interchange on Pefferlaw Road would improve community access and reduce somewhat the community impacts associated with the proposed highway crossing.

S. Jacobs and L. Kozachuk noted that there is still much discussion regarding the Technically Preferred Route crossing through Pefferlaw. It would be premature at this time, therefore, to develop interchange concepts on Pefferlaw Road. Although the proposed interchange at Durham Road 23 provides sufficient capacity to meet the forecast traffic needs in this portion of the study area, an interchange at Pefferlaw Road could be assessed based on improving community access.

R. Magloughlen will be preparing a report for Council's information discussing the above issues. Any comments received from the report will be forwarded to the Highway 404 Project Team.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: Those Present

Telephone: (416) 235-5522
Facsimile: (416) 235-4940

Planning Office
Central Region
3rd Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

January 9, 1997

The Regional Municipality of Durham
Box 623, 1615 Dundas Street East
4th Floor, Lang Tower, West Building
Whitby, Ontario
L3Y 4X7

Attention: Mr. Jim Bate - Planning Department

Dear Sir:

**RE: Highway 404 Extension Environmental
Assessment -Davis Drive to Highway 12**

At our deputation to the Region's Transportation and Works Committees on October 15, 1996 regarding the above project, we presented a proposal for the reconfiguration of the intersection of Highways 12 and 48 south of Beaverton (refer to Figure 1 attached). Committee members noted concerns with the proposal, particularly the need for southbound Highway 12 traffic entering the intersection to make a left turn to continue southbound on Highway 12. Some members suggested that the intersection remain in its present configuration, or be upgraded to an interchange.

Once the Highway 404 Extension is completed, traffic patterns and turning volumes at the south junction of Highways 12 and 48 will likely change. Highway 404 will serve as a high-speed continuous facility between southern York Region and northern York and Durham Regions. As such, it can be expected to attract a portion of the traffic which currently uses the Highway 12 corridor. In addition, the highway will likely extend the commutershed boundary beyond Beaverton, and attract new traffic from areas north and east of Beaverton.

This attraction to the terminus of Highway 404 will result in higher turning volumes between existing Highway 48 and Highway 12/48 (refer to Figure 2 attached). The proposed intersection reconfiguration provides continuous flow for this turning movement.

Forecasts of traffic patterns and volumes in this portion of the study area in year 2021 are reasonable approximations based on anticipated growth rates. The proposed intersection configuration provides a solution to a future traffic condition which may occur once the extension of Highway 404 is completed. The final Environmental Assessment Report for this project will recommend that traffic operations at the south junction of Highways 48 and 12 be monitored to identify any change in intersection level of service. Reconfiguration options can then be considered with more relevant information.

We trust this addresses any concerns with regards to our recommendations for the south junction of Highways 12 and 48. If you have any questions, or require additional information, please feel free to contact me or Chris Ricketts, Consultant Project Manager at (905) 882-4401.

Yours very truly,



S. Jacobs, P. Eng.
Senior Project Manager

lk/lk

cc: H. Pearson - MTO
C. Ricketts - CSA

Attach.



TECHNICALLY PREFERRED
ROUTE

WEEKDAY A.M. PEAK
HOUR SCREENLINE
VOLUMES (SOUTHBOUND)

(1991)

2021

LEGEND


STUDY AREA LIMIT

INTERCHANGE LOCATIONS



HIGHWAY 404 EXTENSION

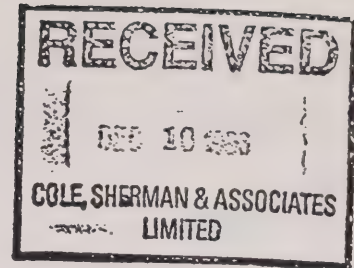
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

 **Ontario**
Ministry of Transportation

EXHIBIT



FIGURE 2 - CHANGING TRAFFIC PATTERNS FOLLOWING COMPLETION
OF EXTENSION OF HIGHWAY 404 TO HIGHWAY 12



THE CORPORATION OF

THE TOWNSHIP OF BROCK

IN THE REGIONAL MUNICIPALITY OF DURHAM

December 5, 1996

Mr. C. Ricketts, P. Eng.
Consultant Project Manager
Cole, Sherman & Associates Ltd.
75 Commerce Valley Drive East
Thornhill, Ontario
L3T 7N9

Dear Sir:

Re: Highway No. 404 Environmental Assessment
Deputation - November 4, 1996
Request For Comments

Further to your deputation on November 4, 1996, Council has requested that their comments made at that time be forwarded to you for consideration (in accordance with your December 20, 1996 deadline set forth in your November 13, 1996 correspondence).

Aside from the general questions posed with respect to the study/road construction, timing, and financing, the Committee has requested further consideration of the proposed interchange location at Regional Road No. 23. Of particular concern is the impact that such an interchange would have on the hamlet of Port Bolster for traffic en route to Beaverton. Port Bolster is a community with many homes in close proximity to this Regional Road. The Committee is concerned that an increase in traffic as a result of the interchange may pose a health and safety risk to the residents of this community.

One alternative suggested by the Committee was to move the interchange easterly to the area where the Brock/Thorah Townline intersects with Highway No. 48 (i.e. Lots 3 & 4 - Brock / Lots 20 & 21 - Thorah). In this regard, traffic en route to Beaverton can be afforded an alternative without travelling through Port Bolster thereby not compromising the safety of the residents of Port Bolster.

Page 2
Mr. Ricketts

Having regard for the above would you please review this matter and provide the municipality with a response to this concern/alternative? Thank-you for your anticipated co-operation. Should you have any questions in the interim please contact me.

Yours truly,

THE TOWNSHIP OF BROCK

A handwritten signature in dark ink, appearing to read 'Thomas G. Gettinby', with a long horizontal flourish extending to the right.

T.G. Gettinby, MCIP, ~~REP~~, AMCT(A)
Township Planner
TGG:rg

cc. Planning File
Clerk's File
Planning Committee Members

MINUTES OF MEETING

DATE: October 21, 1996 **TIME:** 7:00 p.m.

OUR REF.: 6891

LOCATION: East Gwillimbury Town Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: East Gwillimbury Council et al
S. Jacobs - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

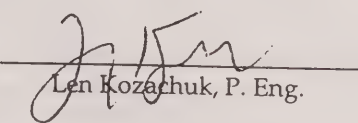
PURPOSE: Presentation of the Preferred Route

S. Jacobs began the deputation with an introduction, discussing the progress to date of the Highway 404 Extension and Bradford Bypass projects, and the general timing for submission and approval of the EA reports. L. Kozachuk made a brief presentation, covering:

- The Technically Preferred Route and Proposed Interchange Locations
- Background behind the recommendations, including the generation of corridors and route alternatives
- Summary of route evaluation
- Schedule of Public Consultation Sessions (PCSs) in the Study Area.

Council asked a few questions; which focused on when properties in the study area would be freed from the development "freeze" currently in effect. S. Jacobs noted that the "freeze" only really pertains to the preferred route corridor, which would not be 100% certain until the E.A. report is approved.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs
H. Pearson

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

COLE, SHERMAN & ASSOCIATES LTD.

75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399

Internet: colesher@idirect.com

MINUTES OF MEETING

DATE: October 21, 1996 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: Town of Georgina Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Town of Georgina Committee of the Whole et al.
S. Jacobs - MTO
H. Pearson - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

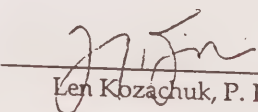
PURPOSE: Presentation of Preferred Route

S. Jacobs led off the deputation with an introduction, discussing the progress to date on the Highway 404 Extension and timing issues. C. Ricketts made a brief presentation, covering:

- The Technically Preferred Route and Proposed Interchange Locations
- Background behind the recommendations, including the generation of corridors and route alternatives
- Summary of route evaluation
- Schedule of Public Consultation Sessions (PCSs) in the Study Area.

Council asked questions regarding specific timing commitments for this project which the MTO noted were outside the mandate of the E.A. Study. The councillor from Pefferlaw requested that he meet with the project team to discuss the evaluation details. Questions were asked regarding the two route alternatives through Pefferlaw.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs
H. Pearson

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

COLE, SHERMAN & ASSOCIATES LTD.

75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 Tel: (905) 882-4401 Fax: (905) 882-4399
Internet: colesher@idirect.com

MINUTES OF MEETING

DATE: October 16, 1996 **TIME:** 9:30 a.m.

OUR REF.: 6891

LOCATION: York Region Municipal Offices Committee Room A

PROJECT: Highway 404 Transportation and Works Committee & Staff

PRESENT: York Region Transportation and Works Committee et al.
S. Jacobs - MTO
H. Pearson - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

PURPOSE: Presentation of Preferred Route

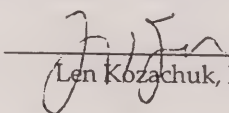
S. Jacobs led off the deputation with an introduction, discussing the progress to date on the Highway 404 Extension and Bradford Bypass. C. Ricketts made a brief presentation, covering:

- The Technically Preferred Route and Proposed Interchange Locations
- Background behind the recommendations, including the generation of corridors and route alternatives
- Summary of route evaluation
- Schedule of Public Consultation Sessions (PCSs) in the Study Area.

A similar presentation was made on the Bradford Bypass.

The Committee generally accepted the study recommendations. However, the committee noted concerns regarding the proposed timetable (or lack thereof) for construction of the highway extension, given the immediate need for improvements to the area road network. Suggestions for fast-tracking construction (e.g. construct a two-lane interim facility in the Hwy. 404 right-of-way) were introduced. S. Jacobs responded that commitment to construction timing is not part of the E.A. study, but discussions should be held between the municipalities and the MTO on the fast tracking options.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs
H. Pearson

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

COLE, SHERMAN & ASSOCIATES LTD.

75 Commerce Valley Drive East, Thornhill, Ontario L3T 7N9 ▴ Tel: (905) 882-4401 ▴ Fax: (905) 882-4399

Internet: colesher@direct.com

MINUTES OF MEETING

DATE: October 15, 1996 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: Durham Planning Office Committee Room

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Durham Region Transportation and Works Committees & Staff
S. Jacobs - MTO
H. Pearson - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

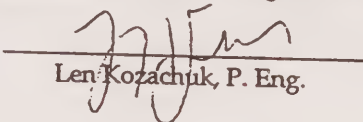
PURPOSE: Presentation of Preferred Route to a joint meeting of the Transportation Committee and Works Committee

S. Jacobs led off the deputation with an introduction, discussing the progress to date on the Highway 404 Extension. C. Ricketts made a brief presentation, covering:

- The Technically Preferred Route and Proposed Interchange Locations
- Background behind the recommendations, including the generation of corridors and route alternatives
- Summary of route evaluation
- Schedule of Public Consultation Sessions (PCSs) in the Study Area.

Committee members generally in favour of technically preferred route. Concern was noted regarding the proposed configuration for the intersection of the transition section and Highway 12, requesting a direct move interchange be considered. The Committee also asked questions regarding the improvements to the Highway 12/48 Corridor, currently being studied under a separate project.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: S. Jacobs
H. Pearson

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Internet: colesher@idirect.com

MINUTES OF MEETING

DATE: January 25, 1996 TIME: 7:00 p.m.
OUR REF.: 6891
LOCATION: Georgina Municipal Offices
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT:

R. Grossi	- Mayor
P. Nichols	-)
K. Hackinbrook	-) Councilors
D. Wheeler	-)
R. Martiuk	- C.A.O.
R. Magloughlen	- Director - Public Works
H. Lenters	- Director - Development Services
S. Jacobs	- MTO
H. Pearson	- MTO
R. Rossi	- MTO
C. Ricketts	- CSA
L. Kozachuk	- CSA

PURPOSE: Social Environment Analysis

This meeting was held to review the refinements to the proposed route alternatives and discuss the data collected to date on community characteristics in the Town of Georgina.

1. Route Refinements

Comments on the proposed route alternatives were received at the last round of public information centres and at workshops held throughout the study area. Based on these comments, route refinements were considered where the overall impacts associated with the route could potentially be reduced. Five route refinements were undertaken in the Town of Georgina:

1. Route B1A near the hamlet of Ravenshoe
2. Routes B3A and B3B in the vicinity of Old Homestead Road and 7th

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Concession

3. Route B2 near Egypt
4. Route B between Stoney Batter Road and Weir's Sideroad, and
5. Route B through Pepperlaw.

These five refinements were accepted because they were considered to have potential for reducing overall impacts to the study area.

2. Community Impacts

It was noted that, apart from the extreme south east corner of the Town, the southern ('C') route does not directly impact Georgina. The discussion on community impacts, therefore, will focus on the northern ('B') route alternatives.

Social impacts to the urban areas of Georgina (e.g. Keswick and Sutton) are readily apparent, however, with rural areas, community boundaries and linkages are not clearly defined in secondary source data. In an effort to document community impacts, the Project Team asked participants to define their perceived community boundary on a map. This boundary would represent the areas that each participant perceived as being important to their sense of community for social, spiritual, economic and/or recreational purposes. The maps were aggregated and interpreted by the Project Team.

The findings of this exercise are being presented to members of Georgina Council, as recognized community leaders representing the diverse interests of the entire Town, for discussion to verify or amend the interpretations to be used in analyzing the impacts associated with the route alternatives.

The following interpretations were obtained from the community bounding exercise:

Character

The northern boundary of the Town is marked by the south shore of Lake Simcoe and the east shore of Cook's Bay. Historically, development focused on the Lake Simcoe shoreline. Much of this growth was seasonal recreational development.

In the past twenty years permanent (year-round) development has grown dramatically in the communities of Keswick, Sutton and Pepperlaw as a result of increased economic activity in the Region and improved transportation facilities and telecommunication technologies. Anticipated growth in the Town will be accommodated in these communities and along the shoreline of the lake.

Keswick is the largest urban area and Sutton is the second largest urban area. Development in these two areas is primarily residential sub-divisions on municipal water and sewage services. Keswick and Sutton provide numerous shopping, recreation and social service opportunities.

Pefferlaw is the smallest of the urban areas in Georgina. Unlike Keswick or Sutton, Pefferlaw is developed on private services. As a result, development is not as dense.

The remainder of the municipality can be classified as rural and contain a number of hamlets and rural clusters. These include Belhaven, Ravenshoe, Brownhill, Baldwin, Elm Grove, Virginia and Port Bolster. Agriculture is the dominant land use except in land constrained by topographic and natural features (Black River Wetland Complex, Zephyr Creek Wetland Complex and Pefferlaw Brook Wetland Complex).

Stability

Georgina can be considered a stable community. Few changes are expected other than in the areas of Keswick and Sutton. Future urban service boundaries, secondary plan boundaries and population/employment targets for these areas are approved in Secondary Plans.

Cohesion

Keswick and Sutton are both self-contained communities and function as a service centre for the surrounding rural area. Residents in Keswick show a strong self-contained community with a weaker link to Sutton. The same can be said for Sutton, where Sutton residents primarily rely on services within Sutton.

Rural residents east of Highway 48 tend to use the services located in Sutton. Residents west of Highway 48 use the services of both Keswick and Sutton.

In addition, East Gwillimbury households in the area bounded by Ravenshoe Road to the north, Queensville Sideroad to the south, Warden Avenue to the east and Highway 48 to the south tend to have ties to a larger physical community. This area has a strong link to Keswick in addition to Queensville, Sharon and Newmarket. Therefore, people who reside in the area described, which is part of East Gwillimbury are linked northerly to Keswick, which is in Georgina. While these residents are linked to Keswick, there does not seem to be a link further into Georgina, to areas such as Sutton.

There is a strong community link in a north-south direction between Baldwin, Elm Grove, and Sutton. This area has a secondary link between central Georgina and both east and west Georgina including Keswick and Pefferlaw.

Pefferlaw has strong internal ties, but also shows linkages along the south

shore of Lake Simcoe to Sutton.

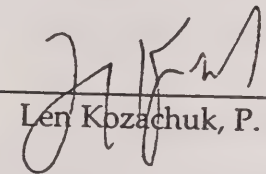
Discussion

Members of Council and municipal staff generally confirmed the data presented, and submitted the following comments:

- Community impacts may be reduced by maintaining access via the existing local road network. The locations of flyovers and road closings will determine the extent of impact to a community. (It was noted that road crossing and closing locations were assumed for the purposes of evaluating the route alternatives; once the preferred route is selected, locations of road crossings and closings will be finalised through discussions with the Town.)
- The councilors agreed that there is a strong link between northern East Gwillimbury and Keswick and this link will further strengthen as development in Keswick increases (as already experienced since the opening of Metmart and Zehr's in Keswick).
- Continued commercial development along Woodbine Avenue will likely expand the perceived community boundary of Keswick into the outlying rural areas. Woodbine Avenue is a major regional road which facilitates access to these developments.
- The present trend in Pepperlaw is one of transformation from a cottage community to a permanent residential community. The 'lake' community of Pepperlaw (north of Highway 48) identifies very strongly with the rest of the community south of Highway 48.
- There is a general perception that a highway through Georgina will act as a barrier between areas within Georgina. The councilors felt that Ravenshoe Road is an ideal location for a new highway corridor. (The project team explained why this is not a feasible option.)
- A new highway will improve operations on existing roads, but interim problems may occur on existing roads during construction stages.
- Baldwin has a stronger link to Sutton than to Keswick; Elm Grove and Baldwin share certain community services, such as a post office, and also share a small town community character. Sutton has a large town community character.
- A highway situated in the B1 corridor would have the least community impact to the Baldwin/Elm Grove/Sutton area, but would lead to increased traffic volumes along Highway 48 between Sutton and the new highway. Highway 48 in the Baldwin area is presently being developed with commercial uses.

- An interchange serving the Pepperlaw area would best be located on Pepperlaw Road or on Weir's Sideroad. An interchange at Durham Road 23 would create significant out-of-way travel impacts.
- Cole, Sherman will forward a list of service clubs and organisations to be verified by the Town Clerk.
- Several community features were identified: community/rec centres in Pepperlaw, Sutton and Keswick, Lyndhurst Golf Course (Baldwin), the pioneer cemetery and fire hall in Pepperlaw, and Sibbald Point Provincial Park (Sutton).

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: Those Present

MINUTES OF MEETING

DATE: January 22, 1996 **TIME:** 1:30 p.m.
OUR REF.: 6891
LOCATION: Brock Township Municipal Offices
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT: Brock Council et al
H. Pearson - MTO
C. Ricketts - CSA
L. Kozachuk - CSA
PURPOSE: Social Environment Analysis

This meeting was held to review the refinements to the proposed route alternatives and discuss the data collected to date on community characteristics in Brock Township.

1. Route Refinements

Comments on the proposed route alternatives were received at the last round of public information centres and at workshops held throughout the study area. Based on these comments, route refinements were considered where overall impacts associated with the route could potentially be reduced. Three route refinements were undertaken in the vicinity of the Township of Brock:

1. Routes C1 and D2 in the Vallentyne/Udora area
2. Route E1 in the Beaverton area, and
3. Route B in the Pfefferlaw area.

These three refinements were accepted because they were considered to have potential for reducing overall impacts to the study area.

2. Community Impacts

Social impacts to rural areas such as Brock Township are not readily apparent because community boundaries and linkages are not clearly defined in secondary source documentation. In an effort to document community impacts, the Project Team asked participants at the latest round of workshops to define their perceived community boundary on a map. This boundary would represent the areas that each participant perceived as being important to their sense of community for social, spiritual, economic and/or recreational purposes. The maps were aggregated and interpreted by the Project Team.

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The findings of this exercise are being presented to Brock Council, as recognized community leaders representing the diverse interests of the entire township, for discussion to verify or amend the interpretations to be used in analyzing the impacts associated with the route alternatives.

The following interpretations were obtained from the community bounding exercise:

Character

Brock is the most rural municipality in the Study Area and includes the towns of Sunderland, Beaverton and Cannington (located west of the Study Area).

The landscape is primarily rural and includes the hamlets of Vallentyne, Vroomanton and Wilfred.

Beaverton is the largest town in the municipality and contains numerous services which support the surrounding area.

Sunderland is much smaller than Beaverton but provides numerous services which support the surrounding area.

Stability

Brock is a stable municipality. Agriculture will remain the dominant land use. The majority of the growth is anticipated to occur in the urban areas of Beaverton, Cannington and Sunderland. Beaverton has the highest forecast for future new residents. While growth is expected to occur within the urban areas, the physical boundaries of these areas will not change appreciably, maintaining the majority of the agricultural land.

Cohesion

The rural area of Brock south of Highway 48 has strong ties to Sunderland, Pefferlaw and Uxbridge. Beaverton is the focus of services for the rural community north of Highway 48.

There is a very strong internal link in Beaverton, with residents within the Beaverton area heavily dependent on Beaverton for community services. There is a strong link between Beaverton and Cannington, with a weaker link to Pefferlaw. Residents in the Beaverton area seem to have very little community link beyond Beaverton, Cannington and Pefferlaw.

Discussion

The councillors generally confirmed the data presented, and submitted the following comments:

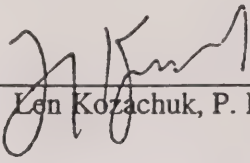
- Any link between Beaverton and Pefferlaw would likely be perceived by Pefferlaw residents only. Similarly, a link between Uxbridge and Sunderland would be perceived only by Uxbridge/Leaskdale residents. Sunderland, however, has a strong connection to the town of Uxbridge.
- The telephone area code changes from 905 to 705 at the 4th Concession. This boundary has an effect on what people consider their community by virtue of whether a local or long-distance phone call is required. The east-west section of alignment D1 therefore would have a high community impact to the residents between the proposed route and the 4th Concession.
- Local communities would suffer high socio-economic and community impacts with

any of the D routes, since a highway would facilitate faster, convenient trips to the larger, developed areas of Sutton, Lindsay and Uxbridge. At the same time, it was recognized that a highway may provide access to new markets for local businesses. The net impact on the transfer of goods and services may depend on how access to and from Brock is impacted by the new highway (i.e. interchange, road crossing and road closing locations).

- The D routes will impact agricultural operations through loss of farmland, severance of linked farming operations and disruptions to the existing local road network affecting movement of farm machinery.
- Gamebridge has a strong community link to Beaverton.
- Route E2 would have a significant impact on the community link between Beaverton and the residential/commercial cluster along Highway 12. This route would also limit the future growth of Beaverton. (C. Ricketts noted that the route is aligned adjacent to the eastern boundary of the future urban area of Beaverton, as identified in the Brock Secondary Plan.) Route E1 would have a lesser impact on the Beaverton area, depending on the interchange location, and would enable Highway 12 to function as a major arterial road for the area.
- The Township requires the locations of the interchanges, road crossing and road closing locations, once they are finalized, to assist in the planning of capital improvement expenditures. C. Ricketts noted that once the preferred route was identified, municipal staff would be consulted in determining road crossing treatments.
- The routes closest to Lake Simcoe would likely impact communities less, since there presently exists a distinction between 'lake' communities and 'farming' communities. Even in Pefferlaw a distinction exists between these two communities.
- Social interaction in the Township is centered around the three major communities of Beaverton, Cannington and Sunderland, which each support service clubs, business areas and recreation facilities for local residents. The high school in Cannington serves the entire township. CSA will forward its list of service clubs identified in the Township for verification by the Clerk's office.
- Council will forward a list of community features to the Project Team. A community feature is defined as a physical, socio-economic or cultural feature that is unique or significant to the community's character. One community feature identified by Council is the tranquil cottage areas along the shore of Lake Simcoe.
- An east-west route through the main body of Brock may have the highest community impact as it splits the Township in half.
- Route D2E may be close enough to the shore of Lake Simcoe that it would effect tranquil cottage character to the west of the route while limiting southerly expansion of Beaverton.
- As Beaverton grows it may attract larger stores such as Canadian Tire. Business growth in Beaverton would benefit from customers from Pefferlaw. A northern route for the highway with convenient interchange locations would improve access to Beaverton.

- The perceived effect to farm operations of a freeway is greater than the actual effect. This is based on observations of existing farms adjacent to existing freeways.

Submitted By:



Len Kozachuk, P. Eng.

LK:lk

cc: Those Present

MINUTES OF TELEPHONE CONVERSATION

DATE: November 21, 1995 **TIME:** 9:00 a.m.
OUR REF.: 6891
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT: J. Linhardt - York Region Planning Office
L. Kozachuk - CSA
PURPOSE: Status on York Region's Comments re: Route B3B

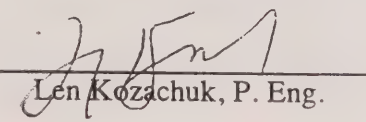
I spoke to John regarding the estimated date for submission of York Region's comments regarding the proposed alignment of route B3B. He indicated that comments would be forthcoming within a month or so. He also requested that the display board of the Keswick area be returned to aid in their review. Cole, Sherman will arrange to have the board forwarded to York Region this week, pending MNR completion of their review of the routes and refinements.

I indicated to John that the Project Team is preparing to distribute a brochure updating study area residents and interested individuals on the progress and revised schedule leading up to the selection of a preferred route. The brochure, featuring a map of the routes to be incorporated in the analysis and evaluation stage, is proposed to be distributed in the next two weeks. This map presently indicates a mid-concession alignment of route B3B.

It is unlikely that York Region will have its review and comments on route B3B completed prior to distribution of the brochure. However, there is still an opportunity, should York Region provide adequate justification, to address York Region's concerns about urban form impacts of route B3B (if it is selected as part of the preferred route) during the preliminary design stage.

John indicated that York Region would not object to having its comments assessed as part of a design refinement, although he will try to submit comments on the proposed route location as soon as possible.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: J. Linhardt - York Region
S. Jacobs - MTO
H. Pearson - MTO
C. Ricketts - CSA

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

Ministry of
Transportation

Ministère des
Transports

Telephone: (416) 235-5522
Facsimile: (416) 235-4940
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Planning Office
Central Region
3rd Floor, Atrium Tower
Ministry of Transportation

October 17, 1995

Ms. Ruth Coursey
Town Planner
Town of East Gwillimbury
19000 Leslie Street
Sharon, Ontario
LOG1V0

Dear Ms. Coursey:

Re: Highway 404 Environmental Assessment and Route Location Study

I am writing regarding the Highway 404 extension route "A", in the vicinity of Queensville.

This route was generated primarily on the basis of reducing impacts to existing agricultural operations, and was first viewed by members of the public in March 1995. Agricultural impacts are reduced significantly by following the mid-concession line between Woodbine Avenue and Leslie Street.

I received a letter dated April 20, 1995 from your predecessor, Caroline McInnis, which suggested that the route passing by Queensville should be reconsidered. The Ministry has not made a formal response to this letter.

Essentially Ms. McInnis's rationale for requesting a reconsideration of the route

location was that since the lands within the Queensville Community plan are owned primarily by land developers, basing the route generation criteria on existing land use is unreasonable. The Queensville Community Plan had shown a route for Highway 404 closer to Woodbine Avenue which would have industrial lands on either side of the freeway. Our current proposal would site Highway 404 along the boundary between proposed industrial land and proposed residential land.

The status of the Queensville Community Plan is an important consideration. Although the Town of East Gwillimbury has approved this proposal, it has not been approved by the Ministry of Municipal Affairs. Our process does not allow us to give higher priority to unapproved land uses over existing land uses.

While it may be true that much of the land within the community plan are owned by land developers, who would give priority to land uses other than the existing agricultural operations, we have found through our workshop process, that one owner has acquired land from the developer, and has full intentions of farming this land for the foreseeable future. This owner has objected to giving a lower priority to agricultural land use.

To locate Highway 404 as suggested by Ms. McInnis would impact the agricultural lands so severely that it would completely eliminate the agricultural function of the land and the Ministry would have to purchase the entire property.

As this land has be re-sold to agricultural interests, so may other lands within the community plan, prior to construction. It becomes increasingly difficult to justify giving priority to the future unapproved land uses, over existing land use. If the Ministry follow the Town's recommendation, an affected land owner could easily point out the inconsistency in our route generation, and make a case at an EA hearing, placing all of Highway 404 approval in jeopardy.

The issue of how a route may affect the community plan, generally falls under the issue of "urban form". To date, the Ministry has discussed this issue at length with the Region of York. The Ministry has responded to the Region by the enclosed letter of August 3, 1995, which outlines the Ministry's position on the urban form issue.

Does the position in the letter from Caroline McInnis accurately reflect the Town's current position regarding the route location in the vicinity of Queensville? If so, could you re-confirm this position, and further provide, as is

requested in the letter to York Region, a rationale for why the Ministry should deviate from its normal, defensible EA process. If the April 20 letter does not reflect the Town's current position, please confirm this, and outline any differences, if any, between the Town's current position and the Ministry's position on this issue.

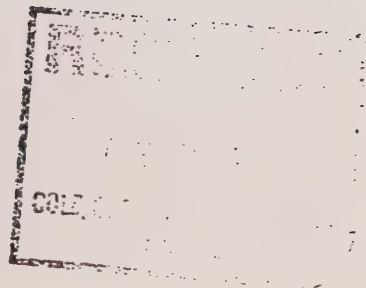
I am available to discuss or clarify these issues further.

Yours Truly,

A handwritten signature in black ink that reads "Steve Jacobs". The signature is written in a cursive, flowing style.

Steve Jacobs, P.Eng.
Senior Project Manager

c.c. C. Ricketts
H. Pearson



August 3, 1995
Our Ref: 6891

Mr. John Waller
Director, Planning Department
Long Range Planning Branch
The Regional Municipality of York
17250 Yonge Street, Box 147
Newmarket, ON
L3Y 6Z1

Dear Mr. Waller:

On February 28, 1995 we met with Mr. Livey and yourself to discuss the issue of urban form on the Highway 404 project. Since then, we have had considerable discussion both within the MTO and with other Provincial Ministries. We understand that Mr. Livey has been temporarily assigned elsewhere so we have redirected our response to you.

We recognize that the proximity to a major highway facility could impact urban form. We also recognize that the form and growth of communities are governed by the Planning Act and articulated through the Official Plans. MTO, while providing transportation infrastructure in support of the Official Plans, is not in a position to assess future development beyond the Official Plan. The fundamental mechanism involved in defending an urban boundary is not generally an MTO issue, and is therefore extremely difficult for us to prove to anyone, the impact on urban form of any given route alternative. Furthermore, issues relating to the municipality's ability to protect a specific urban boundary line, and how this may relate to the ability to service new urban areas, and the role of the OMB in the overall process, obviously are issues well outside MTO's mandate. MTO, however, while responsible for addressing the long range transportation needs of the province, must consider impacts to all aspects of the environment that result from our undertaking. The urban form/urban boundary issue is normally not a part of our Environmental Assessment as it gives precedence to potential future land use over existing land use. Therefore, as we have indicated earlier, our process, via our route generation criteria would not even generate a route based solely on urban form. We do not wish

to simply include such an alternative in our evaluation knowing full well it has no chance of selection.

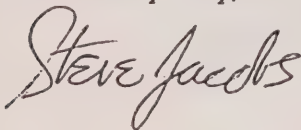
Instead, after much discussion, we are prepared to ask you to consider and respond to a possibility as outlined below. Note that at this point MTO is not convinced that urban form can generally be defended in an EA, but we have outlined what we believe to be the only way to even begin considering urban form within an EA. There is the chance that we may not have sufficient confidence in your response to carry it forward through the EA. Nonetheless, please consider the following.

If there is potential for the highway location to impact future growth beyond the boundaries of the Official Plan, MTO must depend on the Municipality for involvement in addressing the issue. Specifically, you have told us that a Highway 404 route adjacent to Keswick could impact growth in an area outside the boundaries of the development area as defined in the Keswick Secondary Plan. You mentioned similar concerns may be applicable to Sutton, Queensville and Sharon. Therefore, we request that for the Highway 404 route alternatives, York Region provide us with a detailed analysis of route proximity on all urban areas potentially impacted by Highway 404. The EA process requires defensible route generation criteria to be used on a project wide basis in terms of future development beyond the Official Plan horizon and boundaries. We also require defensible, replicable analysis of urban form impacts for each of the Highway alignments (including any additional alignments or route refinements which result from the future development route generation criteria).

We realize that these issues will result in difficult trade-offs and therefore, York Region should be an active partner and provide council resolutions, as well as expertise to defend the analysis and evaluation of any criteria related to urban form both to the public and at an E.A. Board Hearing, if called.

Our schedule includes the evaluation of the preferred route in late summer of 1995. Any additional alignments or route refinements (from our current set of routes) would need to be provided to us by mid-august of 1995. The future urban form criteria will also be required at the time, with the analysis for each route to follow by the end of August.

Yours very truly,



Heather Pearson
Environmental Planner

FOR



September 19, 1995

The Regional
Municipality
of Durham
Clerk's Department

605 Rossland Rd. East
P.O. Box 623
Whitby, Ontario
Canada L1N 6A3
(905) 668-7711
Fax: (905) 668-9963

C. W. Lundy A.M.C.T.
Regional Clerk

Mr. S. Jacobs, Project Manager
Ministry of Transportation
1201 Wilson Avenue
Central Building, Room 226
Downsview, Ontario
M3M 1J8

**Highway 404 Extension from Davis Drive to the North Junction of
Highways 12 and 48 - Preferred Route, Our File: T04-3**

Mr. Jacobs, the Planning Committee of Regional Council considered the above matter and at a meeting held on September 13, 1995, Council adopted the following recommendations of the Committee:

- "a) THAT the route for the Highway 404 Extension illustrated on Attachment #1 to Commissioner's Report #95-P-82 be endorsed as the Region's preferred route, at this time;
- b) THAT the comments contained within Commissioner's Report #95-P-82 be endorsed;
- c) THAT the Ministry of Transportation be requested to consider the comments contained in Commissioner's Report #95-P-82 in their detailed evaluation being conducted to select the technically preferred alternative for the Highway 404 Extension; and
- d) THAT copies of Commissioner's Report #95-P-82 be forwarded to the Ministry of Transportation, the Township of Brock, the Township of Uxbridge, the Town of East Gwillimbury, the Town of Georgina, and the Region of York for their information."

Enclosed for your consideration is a copy of Report #95-P-82 of Mr. A. Georgieff, Commissioner of Planning.



C.W. Lundy, A.M.C.T.
Regional Clerk

CWL/cb
encl.

cc: Mr. G.S. Graham, Clerk-Administrator, Township of Brock
Mr. W.E. Taylor, Clerk, Township of Uxbridge
Mr. L.R. Simpson, Town Clerk, Town of Georgina
Mr. J.F. Hopkins, Clerk-Administrator, Town of East Gwillimbury
Mr. D. Hearse, Clerk, Region of York
Mr. A. Georgieff, Commissioner of Planning
Mr. V. Silgailis, Commissioner of Works



Planning Department
Commissioner's Report to Planning Committee
Report No. 95-P-82
Date: September 5, 1995

SUBJECT

**Highway 404 Extension from Davis Drive to the North Junction of Highways 12 and 48
- Preferred Route, File: 4.1.3.20**

RECOMMENDATIONS

1. THAT Regional Council endorse the route for the Highway 404 Extension illustrated on Attachment No. 1 to Commissioner's Report No. 95-P-82 as the Region's preferred route, at this time;
 2. THAT Regional Council endorse the comments contained within Commissioner's Report No. 95-P-82;
 3. THAT the Ministry of Transportation be requested to consider the comments contained in Commissioner's Report No. 95-P-82 in their detailed evaluation being conducted to select the technically preferred alternative for the Highway 404 Extension; and
 4. THAT copies of Commissioner's Report No. 95-P-82 be forwarded to the Ministry of Transportation, the Township of Bröck, the Township of Uxbridge, the Town of East Gwillimbury, the Town of Georgina, and the Region of York for their information.
-

REPORT

1. Purpose

This report discusses several issues related to the proposed extension of Highway 404 from Davis Drive in York Region to the north junction of Highways 12 and 48. Specifically, the report:

- reviews recently conducted public consultation activities;
- presents a preferred route from a transportation planning and land use policy perspective; and

- introduces the detailed evaluation process the MTO proposes to use for selecting the technically preferred route in the next phase of the Study.

2. Background

- 2.1 On April 18, 1995, Planning Committee received Commissioner's Report No. 95-P-43 advising that the Ministry of Transportation (MTO) was conducting an Environmental Assessment (EA) Study for the Highway 404 extension. The report outlined the five phases of the EA Study, primarily to identify opportunities when the Region would be able to provide comment.
- 2.2 Since the last report, the MTO has completed Phase Three of the Study, which entailed identifying route alternatives, proposing technical evaluation criteria and presenting this information to the public for comment. The previous report identified this as an opportune time for Durham to provide the MTO with comments in order to ensure the Region's concerns will be considered in Phase Four, which involves the selection of the technically preferred route.

3. Public Consultation

- 3.1 Public consultation was a significant component of Phase Three. The purpose of the consultation program was to solicit feedback on potential route alternatives and proposed evaluation criteria, and to obtain additional information from the public. The information collected would be used to refine the routes and evaluation criteria.
- 3.2 Public information centres and workshop sessions were held in late March-early April and late June-early July, respectively, to consult with residents and other stakeholders potentially affected by the freeway. Concerns expressed at the sessions primarily focused on the perceived impacts the facility would pose to adjacent residents and businesses, especially agricultural operators. The comments did not indicate overwhelming support for any of the proposed alternatives, with attendees often stating contrary opinions on the same alignment. A summary report documenting the public information centres held in March and April is provided as Attachment No. 2.

4. Preferred Route for Highway 404 Extension

- 4.1 The preliminary route alternatives for the extension of Highway 404, as illustrated in Attachment No. 1, were reviewed by Regional staff in accordance with the

transportation planning and land use policies of the Durham Regional Official Plan. Detailed technical evaluations could not be conducted at this stage since the MTO has not provided the necessary quantitative information detailing the specific impacts. The timing and nature of the detailed evaluation process is discussed in Section 5 of this report.

4.2 Discussion of Route Alternatives

4.2.1 The following is a discussion of the relative merits of the various proposed route alternatives. The discussion is presented in four parts, one for each distinct section of the routing. Attachment No. 1 illustrates the limits of each section.

4.2.2 Section 1 - Davis Drive to Queensville Side Road

Alternative "A" is the only route presently identified between the current terminus of Highway 404 at Davis Drive and Queensville Side Road. However, the Region of York and the Town of East Gwillimbury are both recommending that the proposed route be located further to the east than its present location midway between Leslie Street and Woodbine Avenue.

There will be no direct impact on the Region of Durham from either alternative "A" route. Durham will not be affected since this section of the route is located entirely within the Region of York.

4.2.3 Section 2 - Queensville Side Road to Lakeridge Road (R.R. 23)

Several route alternatives are being considered in this section south of Lake Simcoe. The alternatives are grouped into two general corridors. The northern "B" corridor traverses this section closer to the lake, entirely within the Region of York. The southern "C" corridor crosses both the Regions of York and Durham, arriving at Lakeridge Road just southeast of Udora.

Corridor "B" is preferred in this section, regardless of which route in the corridor is technically preferred by the MTO, for the following reasons:

- *Corridor "B" best serves the growth areas identified in the York Regional Official Plan.* The provision of a freeway facility in corridor "B" would assist York Region to achieve local development objectives. The forecasted

transportation demands for north York Region necessitate the provision of a freeway, in addition to several arterial road improvements. Considerably greater arterial improvements would be required to accommodate these travel demands, if the freeway facility were located in corridor "C".

- *Corridor "C" provides little benefit to the surrounding land uses.* The facility would provide limited regional structure and economic benefit to this area of Durham. The Durham Regional Official Plan designates the lands within corridor "C" as permanent agricultural reserve, major open space, general agricultural area and hamlet. Forecasted area travel demands for these land uses can be accommodated adequately through normal arterial road improvements.

A freeway in corridor "C" would not complement these planned land uses and may negatively impact on adjacent agricultural operations. This would be contrary to policy direction established for this area in the Durham Regional Official Plan.

- *The public noted that the north/south extension of corridor "C", east of Lakeridge Road, divided the farming community.* The MTO is investigating an alternative north-south alignment to alleviate this impact.

4.2.4 Section 3 - Lakeridge Road (R.R. 23) to Former Township of Thorah Concession 2 (north of the south junction of Highways 12 and 48)

A total of six route alternatives are being considered in this area. However, four of the alternatives ("D1", "D2A", "D2B", and "D2E") are extensions of corridor "C". These routes could be eliminated if "B" were identified as the preferred corridor between Queensville Side Road and Lakeridge Road.

The remaining two routes ("D2C" and "D2D") are extensions of corridor "B". Both routes traverse lands designated as permanent agricultural reserve, general agricultural area and major open space in the Durham Regional Official Plan. The southern alternative, "D2C", would continue the freeway route in an east-west direction midway between the 13th and 14th Lines in the former Township of Brock. Northern alternative "D2D" proposes a route within the existing right-of-way for Highway 48 west of Highway 12, parallel to the current roadway. The facility would likely be situated south of existing Highway 48. Service road connections would be required

for affected property owners to the south of route "D2D", since access from Highway 48 would be restricted by the freeway.

Route alternative "D2C" is marginally preferred for the following reason:

- *Locating the freeway along the route of alternative "D2C" poses the least impact to the existing road network. Selecting alternative "D2C" would enhance the overall flexibility and service of the road network. Siting the freeway in this location would permit Highways 12 and 48 to continue their current transportation network functions. The freeway and arterial facilities would serve complementary roles and improve traffic distribution within Durham Region.*

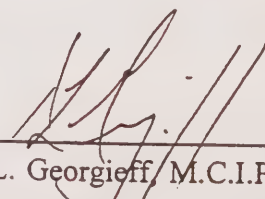
4.2.5 Section 4 - Former Township of Thorah Concession 2 to the North Junction of Highways 12 and 48

Two potential north/south route alternatives are being considered. Alternative "E1" is located east of Highways 12 and 48. Alternative "E2" is located to the west, in close proximity to Beaverton. Both routes traverse similar land uses, primarily designated as permanent agricultural reserve, general agricultural area and major open space in the Durham Regional Official Plan.

Route alternative "E1" is preferred for the following reasons:

- *Alternative "E1" would pose less of an impact to Beaverton residents. The close proximity of alternative "E2" to the urban area would likely have considerable impact on the existing and future residents of the Beaverton urban area. This alternative would necessitate considerable environmental impact mitigation if a freeway were provided along this route.*
- *Alternative "E2" restricts opportunities to provide more local road crossings of the Beaver River. Mara Road is presently the only crossing of the Beaver River in Beaverton. A second local road crossing of the river, west of Highways 12 and 48, would improve transportation service for the town. However, it would be difficult to provide this crossing if alternative "E2" is selected, since a local road could likely not be accommodated in the narrow space between the freeway and the limits of the urban area.*

- 4.3 Attachment No. 1 illustrates the preferred Highway 404 Extension route alternative, at this time, from a transportation planning and land use policy perspective. This preferred route and related comments should be endorsed by Planning Committee and Council, and forwarded to the MTO for their consideration.
5. Detailed Evaluation of Route Alternatives
- 5.1 During Phase Four of the Study, the MTO will select the technically preferred route based on a detailed evaluation of the relative merits of the preliminary alternatives. The MTO is presently assembling the information necessary to evaluate the routes based on these criteria. As noted previously, this is an opportune time for the Region to ensure its transportation planning and land use policy comments are considered by the MTO when the detailed evaluation is conducted to select the preferred route.
- 5.2 The Department will ensure Planning Committee is provided the detailed evaluation results and kept informed of any other pertinent issues.
6. Staff of the Regional Works Department, the Township of Uxbridge and the Township of Brock have reviewed this report and concur with the discussion and recommendations.



A.L. Georgieff, M.C.I.P., R.P.P.
Commissioner of Planning

- Attachment Nos.: 1. Proposed Highway 404 Route Alternatives and Preferred Route
 2. Proceedings of the Phase Three Public Information Centres

PROPOSED HIGHWAY 404 ROUTE ALTERNATIVES AND PREFERRED ROUTE





11
TOWN OF NEWMARKET
Office of the Town Clerk

689/ file

11

August 25, 1995

*Transp & Envir
Sew Comm
Agenda*

TO: The Honourable Al Palladini, Minister of Transportation
Mr. Eldred King, Chairman of The Region of York ✓

FROM: R. Prentice, Town Clerk

RE: Extension of Highway 404 to Herald Road
and Construction of An Arterial Road from
Herald/Highway 404 Interchange Westerly to Highway 9

I am writing to request your consideration of the following resolution of Newmarket Council which was enacted on August 21, 1995:

WHEREAS the extension of Highway 404 to Herald Road and the construction of an arterial road from the Herald Road/Highway 404 interchange westerly to Highway 9 on the west side of Newmarket is a high priority of the Council of the Town of Newmarket;

AND WHEREAS the integration of these projects with the widening of Highway 9, west of Bathurst Street, under a design build project would result in economies of scale, faster construction, earlier return on investment, reduced project administration costs and savings due to project integration;

THEREFORE BE IT RESOLVED by the Municipal Council of the Corporation of the Town of Newmarket as follows:

THAT the Ministry of Transportation and the Region of York be requested to consider the integration of the following Regional and Provincial projects into one overall project:

1. Extension of Highway 404 from Davis Drive to Herald Road.
2. Reconstruction of the Green Lane, Herald Road and Poplar Banks Road from Highway 404 to Bathurst Street by the Region of York.



3. The widening of Highway 9 from Highway 400 to Bathurst Street.

AND THAT this total project package proceed as a design/build project;

AND THAT the Minister of Transportation and the Region of York be so advised.

Yours very truly,

Robert M. Prentice,
Town Clerk.

RMP:ph
(File: 6.7.1 and 6.8.1)



Ministry of
Transportation

Ministère des
Transports

Telephone: (416) 235-5522
Facsimile: (416) 235-4382
e-mail: JACOBSS2@EPO.GOV.ON.CA

Planning Office
Central Region
3rd Floor, Atrium Tower
Ministry of Transportation

July 27, 1995

Mr. Larry Simpson
Town Clerk
Town of Georgina
Corporation of the Town of Georgina
Civic Center
R.R. #2 Keswick
L4P 3G1

Dear Mr. Simpson:

Re: Highway 404 Extension Environmental Assessment and Route Location Study

Thank you for sending the Ministry of Transportation a copy of the minutes of the May 31, 1995 meeting where council took deputations regarding the Highway 404 extension. You may wish to apprise council of the enclosed response.

Many of these concerns have also been expressed to the project team and will be addressed during the Highway 404 extension study. A large number of individuals have expressed to me, and other members of the project team, the support for an extension of Highway 404, in order to accommodate future population growth in the northern part of York Region.

While the Ministry must always act in what it perceives as in the best interest of all citizens of Ontario, I recognize that your council's first priority is its own

citizens. The Town of Georgina will benefit from the extension of Highway 404 in many ways.

As you are aware, a significantly large proportion of Georgina residents commute to employment areas that are south of Georgina's boundaries. There is no provincial system to connect Georgina to the south, and local or regional roads, such as Woodbine Avenue, are forced to sustain the heavy traffic volumes, of commuter, commercial and recreational traffic. The local roads were not designed to carry this level and type of traffic, resulting in concerns over safety, road maintenance, and social impacts to homes and communities through which these roads must pass.

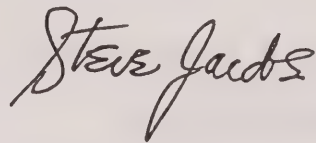
The existing problem is further compounded when accommodating future growth. As Georgina's population grows towards the 2021 level of 65,000 from the current 30,000, these kinds of impacts will increase. In fact, our study shows that the volume of recreational traffic experienced on summer Sunday evenings through Georgina and Brock will become a daily experience in the morning and afternoon peak periods. To deal with this amount of traffic additional infrastructure will be required.

As you are aware the study is considering an alternative route that is well south of Georgina, as well as ones that pass through Georgina.

Through the Environmental Assessment process, both the benefits and the impacts will be studied. The Ministry remains committed to an extensive public consultation process even after identifying the preferred route in fall of 1995. In this way benefits can be maximized and impacts can be minimized through various mitigation methods. I look forward to a continued and open dialogue with your council as well as the citizens of Georgina.

Thank you again for your participation in this study.

Yours Truly,

A handwritten signature in cursive script that reads "Steve Jacobs". The signature is written in dark ink and is positioned above the printed name and title.

Steve Jacobs, P.Eng.
Senior Project Manager

c.c. C. Ricketts CSA
H. Pearson



Ministry
of
Transportation
Ontario

ministère
des
Transports

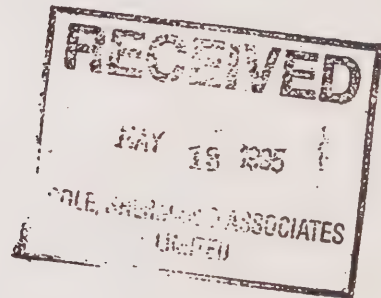
Telephone: (416) 235-5485
Facsimile: (416) 235-4382

Planning Office
Central Region
3rd Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

May 12, 1995

Mr. George S. Graham, AMCT, CMC
Clerk-Administrator
The Township Of Brock
38 Laidlaw Street South
P.O. Box 10
Cannington, Ontario
L0E 1E0

Dear Mr. Graham:



Thank you for your letter dated April 12, 1995 regarding the Highway 404 Extension Environmental Assessment Study.

One of the route generation criteria that was implemented on this study was to minimize property impacts. This was achieved by the routes following mid-concession lot lines at the back of properties as much as possible. As a result, extensive service roads will not be necessary because access to most properties is maintained. Where access to property has been severed by the preferred route the ministry will purchase land that becomes landlocked because of our proposal.

I trust this addresses your concerns.

Yours truly,

Steve Jacobs, P.Eng.
Senior Project Manager

c.c. L. Kozachuk, Cole, Sherman and Associates
D. Naluzny, MTO Property Section
H. Pearson, MTO Environmental Section



Town of East Gwillimbury

MUNICIPAL OFFICE
19000 LESLIE STREET
SHARON, ONTARIO L0G 1V0
TELEPHONE: (905) 478-4282
FAX: (905) 478-2808

April 20, 1995

Mr. Steve Jacobs
Ministry of Transportation
District 6
First Floor, Atrium Tower
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

Dear Sir:

Re: Proposed Highway 404 Extension Study
Town of East Gwillimbury

Further to our recent letter, I wish to make additional comments regarding the proposed alignment for the Highway 404 extension through the Town of East Gwillimbury.

The proposed Queensville Community Plan (Official Plan Amendment No. 89) outlines an approximate location for Highway 404, as shown on the attached Schedule. This was designed to allow for the future development of an industrial area with sufficient separation distance from proposed residential neighbourhoods. By relocating the highway to the west, it will seriously affect the Queensville Plan and will negatively impact both the industrial area and the proposed neighbourhoods. I understand that the Highway 404 alignment currently shown by the Ministry of Transportation has been designed to provide the least disturbance to existing agricultural land parcels in the area of Queensville. However, many of the agricultural parcels around Queensville are currently owned or controlled by developers for future development purposes. The future plans for this area should also be considered.



Proposed Highway 404 Alignment

2.

To conclude, the Town is requesting a shift in the alignment of the highway corridor to the east, to correspond approximately with the Queensville Community Plan. The proposed route would also align with the easterly shift surrounding the community of Sharon. Should you wish to discuss this matter further, please contact me.

Yours truly,

C. McInnis

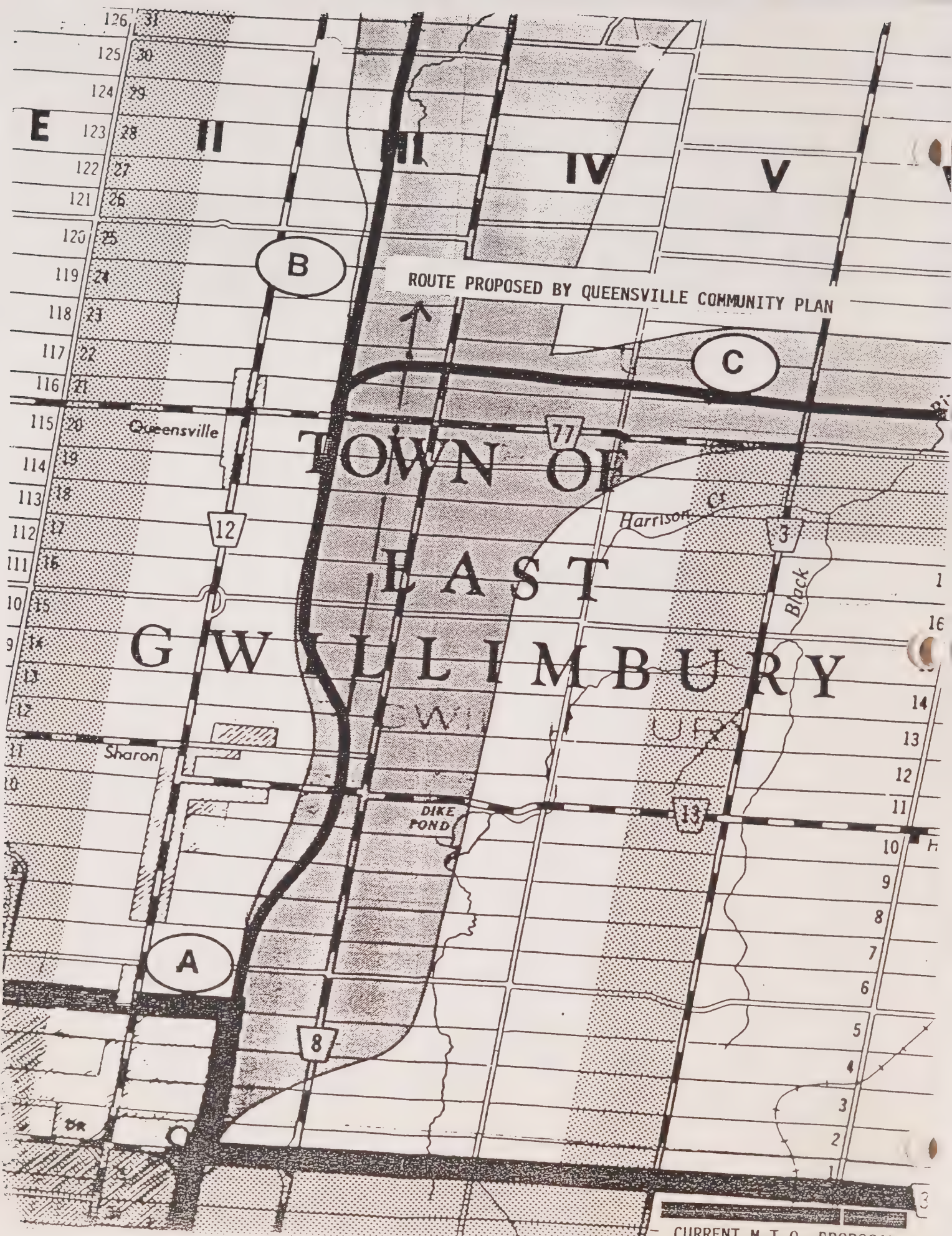
Caroline McInnis, M.C.I.P.
Town Planner

CM:vl

encl.

c.c.:

Mayor and Members of Council
S. Makuch, Borden & Elliott
J. Livey, York Region Planning Dept.
J. Dymont, Lehman & Assoc.



ROUTE PROPOSED BY QUEENSVILLE COMMUNITY PLAN

Queensville

Harrison

Black

Sharon

DIKE POND

CURRENT M.T.O. PROPOSAL

April 12, 1995

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Officer
Ministry of Transportation
1201 Wilson Avenue
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8

Dear Mr. Jacobs:

Re: Hwy. 404 Extension

I have been asked to write to you for the purpose of obtaining clarification with respect to who will be responsible for building the service roads to access properties in conjunction with the Hwy. 404 Extension Project.

Should you wish to discuss this request further, please contact me at (705) 426-7723 at your convenience.

Yours truly,

THE TOWNSHIP OF BROCK

George S. Graham, AMCT, CMC
Clerk-Administrator
GSG:SC

cc: Len Kozachuk, P. Eng., Cole Sherman & Associates Ltd. ✓

MINUTES OF MEETING

DATE: March 13, 1995 **TIME:** 2:00 p.m.

OUR REF.: 6891

LOCATION: Uxbridge Town Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Uxbridge Town Council
R. Rossi - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

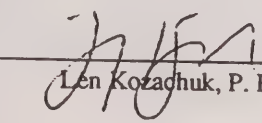
PURPOSE: Presentation to Uxbridge Town Council

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.

The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs

The Mayor requested that the Highway 404 Extension Study corridors and Ontario Hydro S.T.R. Study corridors be shown on a map to illustrate to what extent the Township was being placed under study.

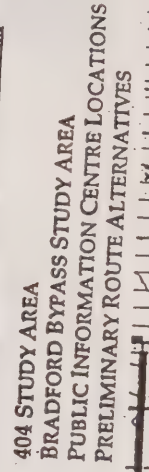
Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.



MINUTES OF MEETING

DATE: March 9, 1995 **TIME:** 2:00 p.m.

OUR REF.: 6891

LOCATION: York Region Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: York Region Council
S. Jacobs - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

PURPOSE: Presentation to York Region Council

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.

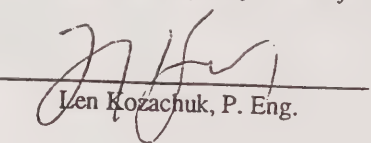
The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs. The floor was then opened to questions.

- Q1. Will the EA be submitted in two phases?
- A1 *MTO is considering submitting two separate E. A. studies for the extension of Highway 404 north of Davis Drive: one for the section between Davis Drive and Green Lane/Herald Road, and one for the extension north of Green Lane/Herald Road. The two E. A.s will be submitted in 1996, and it is hoped that approval will be obtained sometime in 1997.*
- Q2. Why not submit an E. A. for the section of the extension between Davis Drive and Queensville Sideroad, since there is only one alternative proposed?
- A2. *Using Queensville Sideroad as the breakpoint for the two E. A. s may jeopardize the need statements for both E. A. studies, as it does not properly address the infrastructure required to serve growth in northern York and Durham Regions.*
- Q3. (In the Keswick area), the need is not in 2011, the need is now. Development (in Georgina) should not be allowed to proceed until the highway is extended?
- A3. *MTO is aware of the urgency for this highway for northern York Region. The timetable for construction, however, is not affected by where the study is split.*
- Q4. Keswick began developing in 1991. Why wasn't this study started earlier and why is it taking so long to complete?

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- A4. *A lot of time has been spent defining the need for this project, which is critical for obtaining approval.*
- Q5. *Several of the proposed routes do not provide a connection to Highway 7 and Lindsay, which was part of the justification for the previous study?*
- A5. *Revised traffic forecasts indicate that traffic volumes along Highway 12/48 will be much greater than the volumes on Highway 7. The need to connect to Highway 7, therefore, is not as significant as the need to serve Highway 12/48.*

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

MINUTES OF MEETING

DATE: March 7, 1995 **TIME:** 7:00 p.m.

OUR REF.: 6891

LOCATION: Newmarket Town Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Newmarket Town Council et al
S. Jacobs - MTO
C. Ricketts - CSA

PURPOSE: Presentation to Newmarket Town Council

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.

The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs.

Council discussion focussed on Green Lane/Herald Road upgrading issues.

Submitted By:


Chris Ricketts

LK:lk

cc: Those Present

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

MINUTES OF MEETING

DATE: March 6, 1995 **TIME:** 1:00 p.m.

OUR REF.: 6891

LOCATION: East Gwillimbury Town Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: East Gwillimbury Council

S. Jacobs	-	MTO
R. Rossi	-	MTO
C. Ricketts	-	CSA
L. Kozachuk	-	CSA

PURPOSE: Presentation to East Gwillimbury Town Council

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.

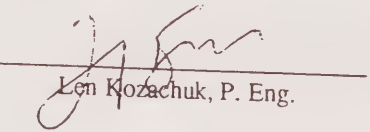
The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs. The floor was then opened to questions.

- Q1. Why is MTO studying the C route when it does not directly address the future transportation needs of Keswick?
- A1. *The B routes are closer and therefore more directly serve the growing areas of Keswick and Sutton. The northern routes may have significant social impacts in the Pepperlaw area, however, which the C routes avoid. In the analysis of the C routes, use of the north-south roads to feed the C routes will be considered.*
- Q2. What is the timetable for this project?
- A2. *Preferred route will be selected in Fall 1995; preliminary design will be completed in Winter 1995/96; EA submission to MOEE in 1996. Construction will commence northward from Davis Drive.*
- Q3. There is only one route alternative shown between Queensville Sideroad and Davis Drive. What if this routes creates significant impacts?
- A3. *The alignment of the route alternatives can be refined at this stage to reduce impacts.* Q4. Will lands proposed for dev
- A4. *Yes.*
- Q5. Catering Road between Maple Hill and Ravenshoe has historical significance. Will it be maintained?

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- A5. *Impacts to the local road network are being studied further to determine which roads will be closed, and which roads will have flyovers provided.*
- Q6a. (Town Planner) How will development in Keswick be linked to the highway construction schedule?
- A6a. *Discussions are being held with York Region with respect to widening of Woodbine Avenue vs. extension of Highway 404. Traffic modelling shows Highway 404 extension and Woodbine Avenue widening required to accommodate traffic from Keswick. Staging will be considered as part of this study.*
- Q6b. How will noise impacts to the community of Sharon be addressed?
- A6b. *A noise impact assessment will be conducted as part of this study, and mitigating measures, if required, will be identified.*
- Q6c. In the area north of Queensville, where the Bradford Bypass and Highway 404 extension interchange will be located, extreme development pressures will be placed on these lands, which is not incorporated into the Queensville Secondary Plan. As a result, this Plan will have to be revisited once the alignments of these two highways are finalised.
- A6c. *The route alternatives are generated based on existing land uses. The Project Team will work with regional and municipal staff to ensure future development issues are addressed.*
- Q7. Will Highway 404 be widened south of Davis Drive?
- A7. *MTO will continue the widening of Highway 404 to improve capacity, as required..*
- Q8. (Town Engineer) Depending on which route alternative is selected in the vicinity of Keswick, an interchange may be required on Boag Road, which is presently a two-lane Town Road. If the recommended scenario requires that Boag Road is upgraded to accommodate an interchange, Boag Road should be reverted to an upper-tier municipality. Also, a B route alternative is preferred to a C route because Georgina traffic will be served directly, reducing impacts to East Gwillimbury's road network
- A8. *A letter outlining the town's concerns should be forwarded to the Project Team.*

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

MINUTES OF MEETING

DATE: March 1, 1995 **TIME:** 10:30 a.m.

OUR REF.: 6891

LOCATION: Durham Region Council Chambers

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Durham Region Council
S. Jacobs - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

PURPOSE: Presentation to Durham Region Council

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.


The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs. The floor was then opened to questions.

- Q1. Road designs have been completed on several projects in the area, but construction has not yet begun. Why does it take such a long time to construct projects once the design has been completed?
- A1 *Funding commitments, political will, planning must precede construction to protect property for ultimate facilities not required in the immediate future.*
- Q2. What compensation is provided for properties affected by the proposed right-of-way?
- A2. *Fair market value at the time of purchase, generally two to three years prior to construction.*
- Q3. Given the long-range timetable for construction completion of this project, why are route locations being studied now?
- A3. *Planning must precede construction to protect property for ultimate facilities not required in the immediate future. The longer the delay in locating a route, the more diminished the opportunity to site viable routes.*
- Q4. Has future development been incorporated in determining traffic demand and interchange locations?
- A4. *Future traffic volumes (generated by MTO) are based on OGTA information, which incorporates future population/employment projections.*

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- Q5. Which route best serves future traffic demand?
- A5. *Northern routes are closest to future development areas, such as Keswick and Sutton but agricultural and natural impacts have not yet been evaluated. Through traffic (to/from areas east and north of Lake Simcoe) will be served equally well with any route.*
- Q6. Has the construction timetable been affected by the proposed Rama Casino?
- A7. *No traffic impact reports have yet been produced by the Casino group.*
- Q8. What is the timetable for completing the EA?
- A8. *Preferred route will be selected in Fall 1995; preliminary design will be completed in Winter 1995/96; EA submission to MOEE in 1996; approval expected in 1997.*
- Q9. If the EAs for Highway 407 were completed in the 1960's, why are more studies of Highway 407 now being done?
- A9. *The Highway 407 EA studies completed in the 1960's fixed the location of the highway between Highway 403 and Highway 48. The EA studies currently underway are looking at the section east of Highway 48.*
- Q10. (Summarized) The traffic using the highway is primarily originating in York Region and destined for southern and central York Region (and Metro), therefore York Region is the prime benefactor of this highway, which is to be provincially funded?
- A10. *(Summarized) Much of the route is in York Region so obviously will serve that region. As Highway 404 is extended direct links into Durham Region and beyond will be introduced.*
- Q11. Why is MTO pursuing highway construction as a means of addressing future travel demands, when future technologies are being developed which may preclude the need for people to travel by road?
- A11. *MTO is providing infrastructure to meet the future needs identified by the regional municipalities in their Official Plans.*
- Q12. How definite will the preferred route location be (in terms of the physical highway alignment)?
- A12. *The route alternatives are being presented to the public to discuss possible refinements and other improvements, so there is presently opportunities for the routes to be realigned as required. Once the alignments have been finalised, the analysis and evaluation will be completed and the preferred route identified. Once identified, opportunities for refining the preferred route will be limited to slight refinements on an individual property basis.*

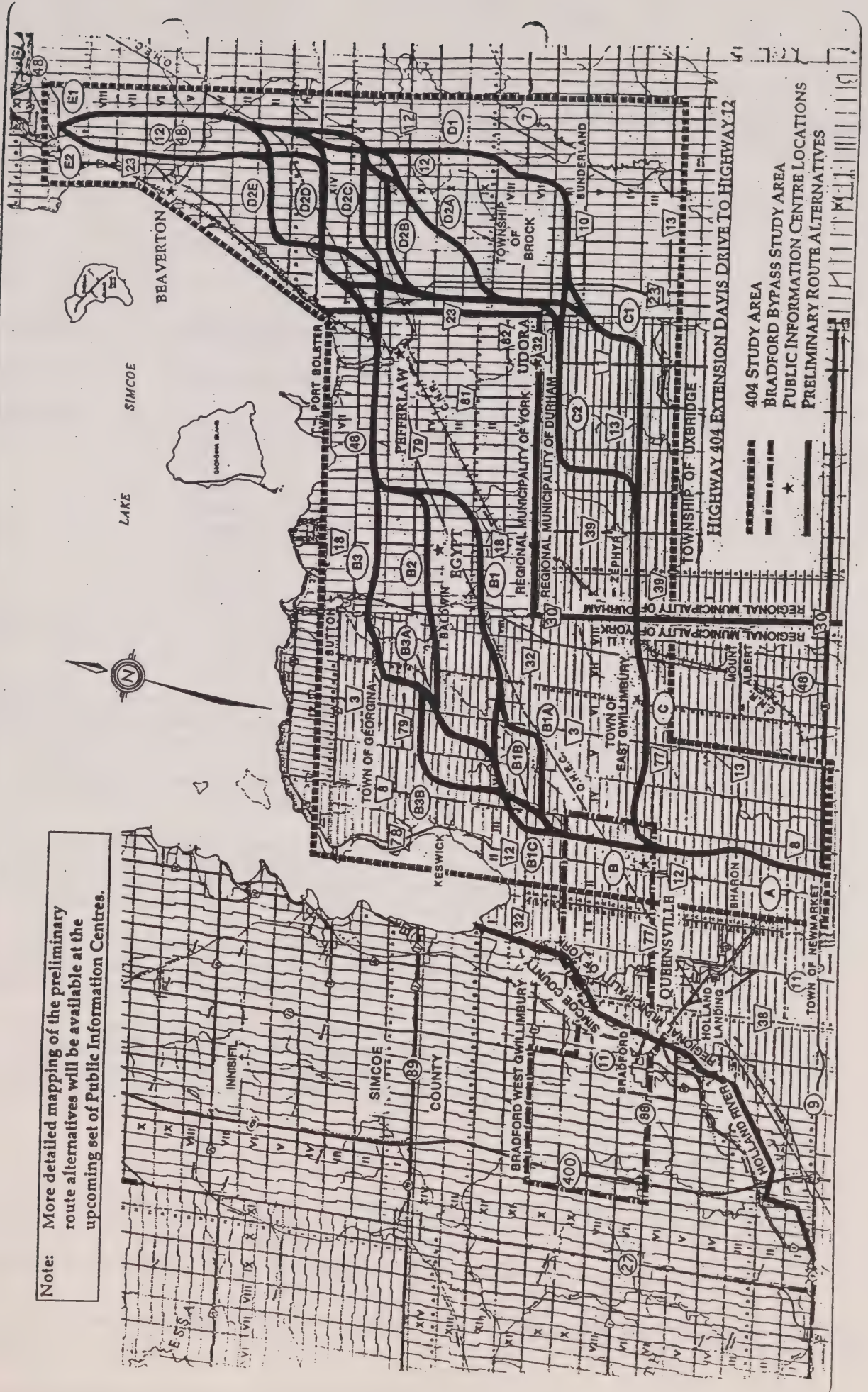
Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.



MINUTES OF MEETING

DATE: February 28, 1995 **TIME:** 4:00 p.m.

OUR REF.: 6891

LOCATION: York Region Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

J. Livey	- Region of York - Planning Commissioner
J. Waller	- Region of York - Planning
P. May	- Region of York - Transportation
S. Jacobs	- MTO
H. Pearson	- MTO
C. Ricketts	- CSA
S. Cumming	- CSA
C. Murray	- CSA
L. Kozachuk	- CSA

PURPOSE: Route Design Objectives

York Region has expressed concern that the alignment of route alternative B3B along the eastern edge of Keswick neglects the potential impacts to urban form around Keswick. The mid-concession alignment would place extreme development pressures on lands between Woodbine Avenue and the proposed highway. York Region would prefer that the highway alignment be located as close to Woodbine Avenue as possible to minimize impacts to the Keswick urban form. The purpose of the meeting was to explain how MTO will incorporate impacts to urban form (specifically in the Keswick area) into the location of route alternatives.

C. Murray reviewed the major design objectives used to develop route alignments in the corridors: reduce impacts to existing areas of human settlement, natural environment areas and existing agricultural operations. Impacts to future land use and future urban expansion associated with a route alternative would be considered according to the evaluation factors and indicators and incorporated into the evaluation of the route alternatives.

J. Livey stated that this process considers impacts to urban development too late in the process, i.e. after the route is generated. By considering impacts to urban development as part of the route generation criteria rather than evaluation criteria, impacts can be mitigated more readily.

He suggested that any route passing within one kilometre of an urban boundary be considered as having an impact on future urban development. Lands situated between the proposed highway and the proposed urban boundary would come under extreme development pressures, which, in past instances, have been difficult to oppose. As a result, the highway would essentially become the new urban boundary, compromising the Secondary Plan of the area.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

Mr. Livey suggested that, in the case of Keswick's Secondary Plan, it would be preferable to have route B3B aligned as close to Woodbine Avenue (the eastern urban boundary for Keswick) as possible. Aligning the highway mid-concession, as currently proposed, would place a large area of land between Woodbine Avenue and the highway under extreme development pressure.

J. Livey provided his opinion on the other urban areas in the study area in terms of the proposed highway alignments' impacts to the urban boundary:

Sharon: The proposed highway alignment would have no impact on the urban boundary because Woodbine Avenue would serve as the ultimate urban boundary in this area.

Sutton: The B3 alignment (if selected) will likely end up as the southern urban boundary, but the pressures to extend development to this boundary would not be realised in the immediate future.

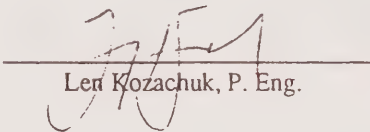
Pefferlaw: The future urban boundary of this community is constrained environmentally, and it is presently a seasonal community. Alignment B (if selected) would have little or no impact on urban development in this community.

H. Pearson stated that the design objectives and evaluation criteria developed for this project recognize the Ministry's provincial obligations with respect to minimizing impacts to existing property uses, and are consistent with other MTO projects. MTO (and perhaps MOEE) would have grave concerns about incorporating impacts to future land uses at the expense of existing uses.

It was suggested that the latest Planning Act reforms may provide MTO with the power to refine alignments to minimize impacts to future land uses notwithstanding the existing use, in the spirit of developing an integrated urban planning/transportation planning solution.

MTO will review its present position on land use impacts and inform J. Livey of what action, if any, will be taken to address his concerns. In the interim, a box will be placed around alignment B3B and a text box added to the display boards noting that the alignment is under additional study and may be refined.

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

MINUTES OF MEETING

DATE: February 27, 1995 **TIME:** 7:00 p.m.

OUR REF.: 6891

LOCATION: Georgina Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

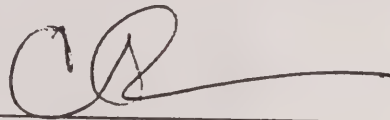
PRESENT: Georgina Council
S. Jacobs - MTO
C. Ricketts - CSA

PURPOSE: Presentation of Route Alternatives

A presentation was made to Council to update them on the progress to date of the study and inform them of the upcoming set of Public Information Centres (PICs) in the Study Area.

The presentation incorporated a brief review of what was presented at the last Council presentation, the information to be shown to the public at the PICs, the project schedule, and the schedule of PICs.

Submitted By:



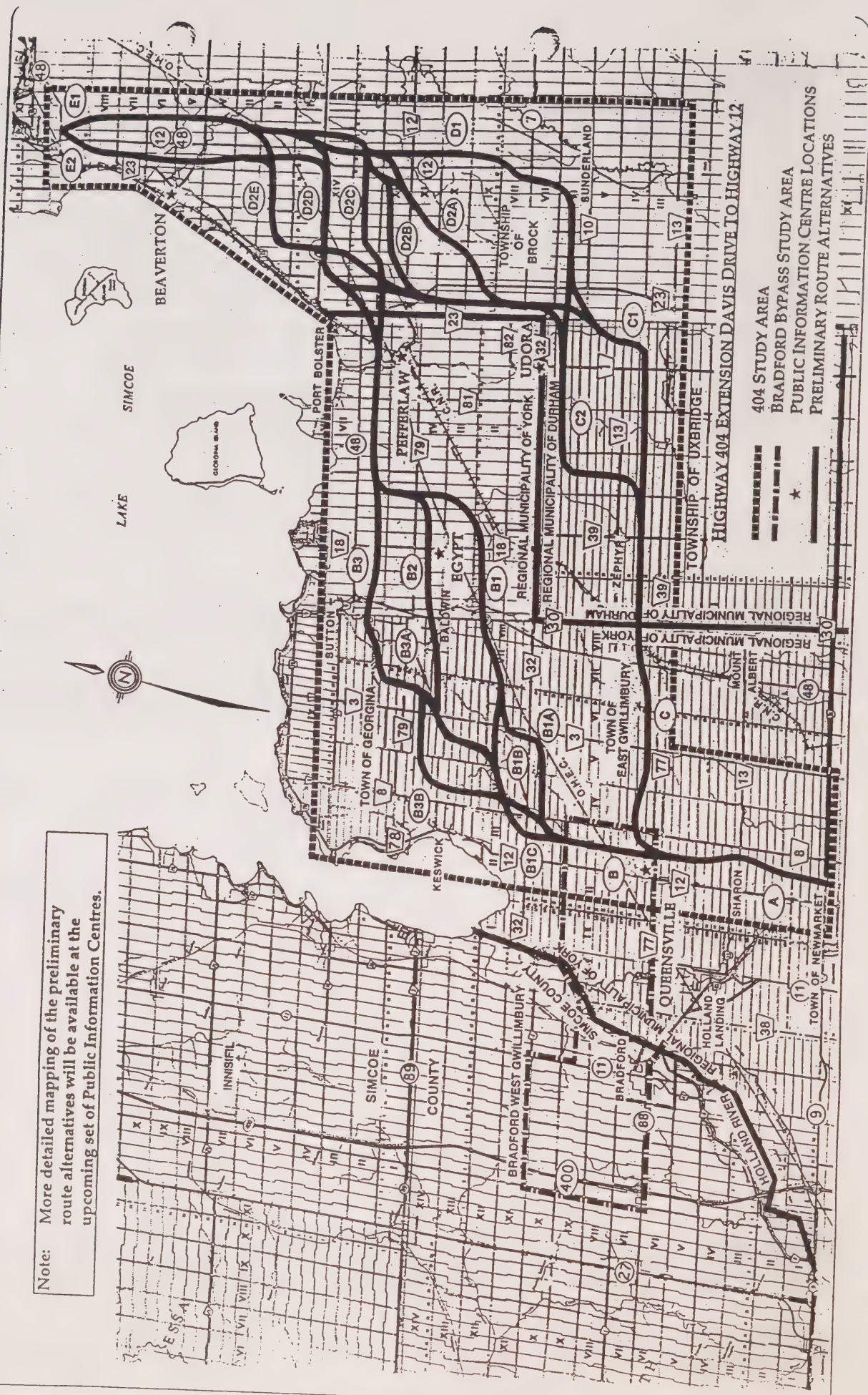
Chris Ricketts

CR:lk

cc: Those Present

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.



- 404 STUDY AREA
- BRADFORD BYPASS STUDY AREA
- PUBLIC INFORMATION CENTRE LOCATIONS
- PRELIMINARY ROUTE ALTERNATIVES

HIGHWAY 404 EXTENSION DAVIS DRIVE TO HIGHWAY 12

MINUTES OF MEETING

DATE: February 27, 1995 **TIME:** 10:00 a.m.

OUR REF.: 6891

LOCATION: Brock Township Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: Brock Council
S. Jacobs - MTO
C. Ricketts - CSA
L. Kozachuk - CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives (see attached). The purpose of the meeting was to update Council on progress to date in advance of the Public Information Centres scheduled for late March / early April 1995.

1. The study process followed to date was briefly reviewed. The corridor generation process and proposed 100 m wide route locations were also reviewed. It was noted that the northern route alternatives pass through a common crossing point near Pefferlaw. The southern routes provide alternative alignments around Pefferlaw. Proposed interchange locations were discussed.

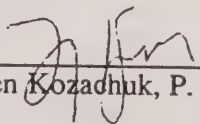
Over the next several months, the route alternatives will be refined, analysed and evaluated. The preferred route will be presented in fall/winter of this year.

2. Council noted the following issues and concerns:
 - MTO also has a Highway 12 Corridor Study currently in progress. *The Highway 12 Corridor Study is operating independantly of the Highway 404 Study. The Highway 12 study addresses immediate solutions to capacity and safety problems along Highway 12, whereas the Highway 404 study addresses the long-term need for a high-speed controlled access facility around the east side of Lake Simcoe.*

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- Impacts to local road network associated with staged termini locations and the ultimate scheme.
Interchanges, flyovers and road closings have not yet been addressed in detail. Preliminary interchange locations have been proposed, and more detailed traffic information will be reviewed to determine where flyovers and road closings will be implemented. Access for emergency vehicles and minimizing out-of-way travel will be considered in determining road crossing/closing locations.
- Impacts to property owners impacted by the preferred route.
The right-of-way will be designated once approval of the EA Report is received (tentatively 1997). MTO will not move to purchase any properties on this right-of-way until about five years prior to construction, allowing them to remain in their present use. In certain instances, an affected landowner wishing to sell may appeal to MTO for purchase on grounds of hardship. Subject to certain conditions and availability of funds, MTO may proceed with an advance purchase of such properties.
- Transfer of Highway 12 to presiding municipalities once Highway 404 is constructed.
MTO will be looking to transfer roadways no longer serving a provincial highway function to the municipalities. No road transfers have been considered at this point in the study.
- Council is limited on input it can provide vis a vis the preferred alternative because it is not privy to the pertinent information. Traditionally, Council is asked to provide input too late in the process to affect the decisions.
Council will be sent the completed analysis table and will be consulted during the route evaluation stage to enable them to provide meaningful input. Council will also be sent the Environmental Assessment Proposal and a record of public input to date.
- Proposed routes may have significant impacts to viability of agricultural operations.
The proposed route alternatives were generated with the objective of reducing impacts to agricultural operations by following property and field lines wherever possible. The intensity of use and level of capital investment of each farm in the corridors was also considered in an effort to reduce impacts to agricultural operations.

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: G. Graham - Clerk
S. Jacobs - MTO
H. Pearson - MTO

Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.

404 STUDY AREA
BRADFORD BYPASS STUDY AREA
PUBLIC INFORMATION CENTRE LOCATIONS
★
PRELIMINARY ROUTE ALTERNATIVES

HIGHWAY 404 EXTENSION DAVIS DRIVE TO HIGHWAY 12

★

MINUTES OF MEETING

DATE: February 24, 1995 **TIME:** 1:00 p.m.

OUR REF.: 6891

LOCATION: Durham Region Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

A. Georgieff	- Region of Durham - Planning Commissioner
B. Johnson	- Region of Durham - Planning
J. Bate	- Region of Durham - Planning
M. Lenters	- Region of Durham - Works
T. Gettinby	- Township of Brock
G. Graham	- Township of Brock
A. Grant	- Township of Uxbridge
W. Taylor	- Township of Uxbridge
S. Jacobs	- MTO
C. Ricketts	- CSA
L. Kozachuk	- CSA

PURPOSE: Presentation of Route Alternatives


This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives (see attached). The purpose of the meeting was to identify issues and concerns related to the study in advance of presentations to Durham Region Council and Brock and Uxbridge Municipal Councils.

1. The study area, study background and corridors presented at the last working meeting were briefly reviewed. The route alternatives are basically located in two major corridors located north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pefferlaw. The southern routes avoid the impacts to Pefferlaw, but do not provide direct access to the growth areas and will likely generate greater natural environment impacts than the northern routes. Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The EA report will be likely be submitted to MOEE in 1996.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

2. It was noted that a new route is being proposed east of Beaverton, and that Highway 12/48 would remain to serve as a local arterial road. MTO is presently studying operational improvements for the Highway 12/48 corridor to address immediate concerns.
3. It was also noted that only one route alternative provides a connection to Highway 7. Traffic modeling using the updated trip generation tables has shown that the traffic entering the study area from the north along Highway 12 and Highway 48 (East) is significantly greater than the volume along Highway 7. All the routes, therefore, were generated to provide a connection to Highways 12 and 48 (East) north of Beaverton.
4. Preliminary interchange locations were discussed. Due to the potential impact on adjacent land uses, interchange locations will be discussed with regional planning staff at the next stage of the study.
5. Copies of presentation materials will be forwarded to each municipality for their information.

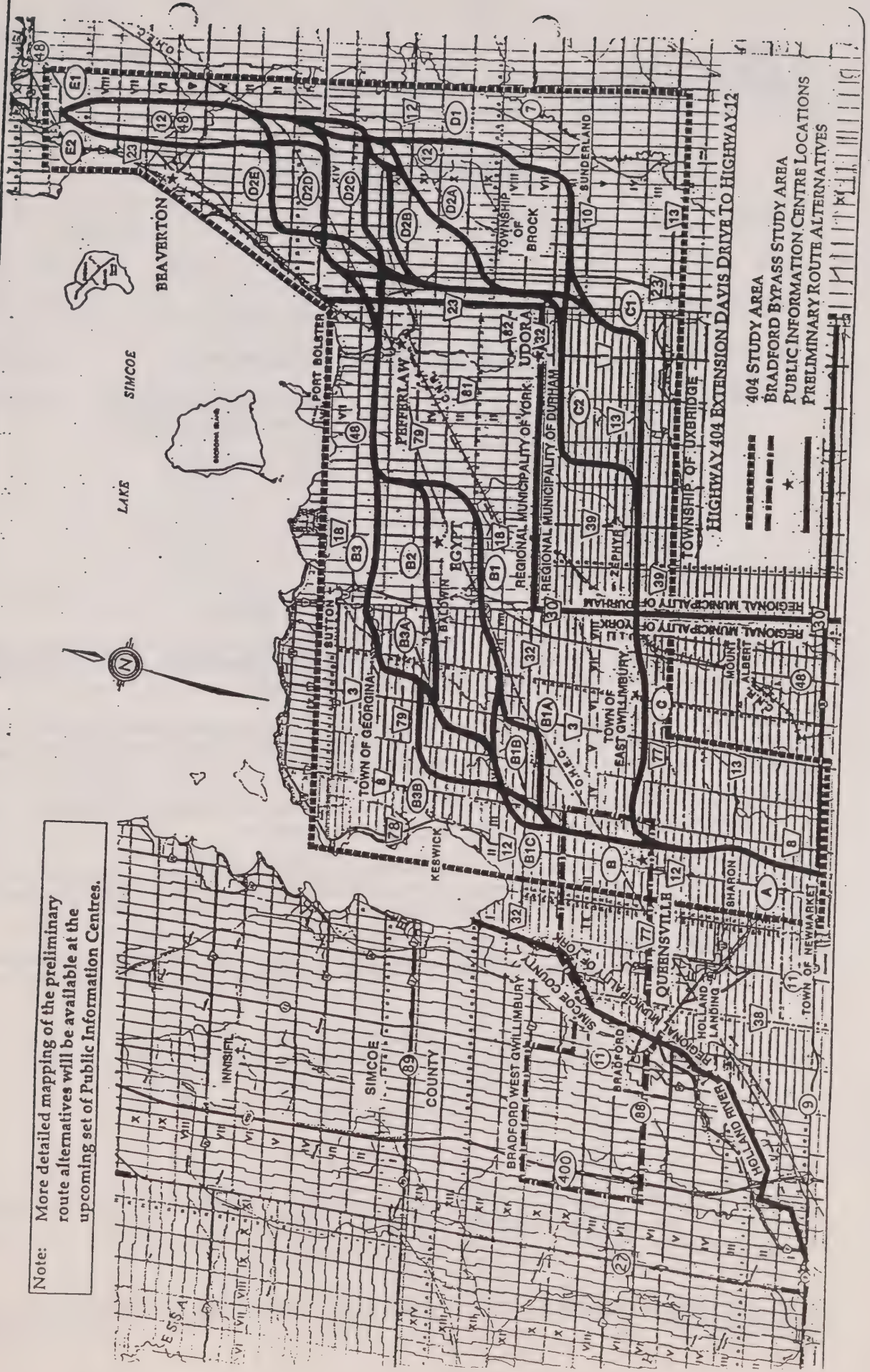
Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.



MINUTES OF MEETING

DATE: February 23, 1995 **TIME:** 1:30 p.m.

OUR REF.: 6891

LOCATION: East Gwillimbury Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

W. Hunt	- East Gwillimbury - Engineering
C. McInnis	- East Gwillimbury - Planning
S. Jacobs	- MTO
H. Pearson	- MTO
R. Rossi	- MTO
C. Ricketts	- CSA
L. Kozachuk	- CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives (see attached). The purpose of the meeting was to identify issues and concerns related to the study in advance of a presentation to East Gwillimbury Municipal Council.

The study area, study background and corridors presented at the last working meeting were briefly reviewed. Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The EA report will likely be submitted to MOEE in 1996.

The issue of noise impacts to proposed subdivisions south of Mount Albert Sideroad was discussed. A noise analysis will be undertaken as part of the evaluation of the route alternatives.

Interchange locations were also discussed. An interchange on Mount Albert Sideroad is not proposed, however a traffic analysis will be completed to determine the impacts to traffic volumes and operations on Woodbine Avenue, Mount Albert Sideroad and Leslie Street under this scenario.

An interchange is proposed on Boag Road with some route alternatives. Mr. Hunt expressed concern that if an interchange is required on Boag Road, this road, which is currently maintained by the Town, should be transferred to the upper-tier municipality.

Submitted By:


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

MINUTES OF MEETING

DATE: February 22, 1995 **TIME:** 10:00 a.m.

OUR REF.: 6891

LOCATION: York Region Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

K. Shipper	- Region of York
J. Livey	- Region of York - Planning Commissioner
B. Harrison	- Region of York - Transportation Dept. Mgr.
J. Waller	- Region of York - Planning
J. Mark	- Region of York - Transportation
P. May	- Region of York - Transportation
S. Jacobs	- MTO
C. Ricketts	- CSA
L. Kozachuk	- CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives (see attached). The purpose of the meeting was to identify issues and concerns related to the study in advance of a presentation to York Region Council scheduled for March 9, 1995.

1. York Region expressed concern that the alignment of route alternative B3B along the eastern edge of Keswick neglects the potential impacts to urban form around Keswick. The mid-concession alignment would place extreme development pressures on lands between Woodbine Avenue and the proposed highway. York Region would prefer that the highway alignment be located as close to Woodbine Avenue as possible to minimize expansion of the urban boundary.

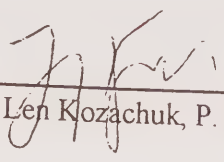
CSA noted that present MTO policy weighs existing land uses higher than future potential land uses outside Official Plan limits. For this reason, outside of established urban area boundaries, reducing impacts to natural areas, properties and agricultural operations were the prime considerations in route generation.

A meeting will be held with York Region Planning staff to discuss opportunities for adding or refining route alternatives to account for Keswick's urban form.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

2. The study area and study background were briefly reviewed. It was noted that for the purposes of traffic modelling, Woodbine Avenue was assumed to be widened to four lanes between Ravenshoe Road and Herald Road; Leslie Street was assumed to remain at its present two-lane cross-section. The reasons for not using the Ravenshoe Road route alternative as a corridor were also reviewed.
3. The route alternatives are basically located in two major corridors located north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pefferlaw. The southern routes avoid the impacts to Pefferlaw, but do not provide direct access to the growth areas, and would likely generate greater natural environment impacts than the northern routes. Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The EA Report will be submitted to MOEE in 1996.
4. York Region has prepared a Council Resolution requesting that MTO submit the Highway 404 Extension EA in parts, to avoid delaying construction to the less controversial sections of the study area north of Davis Drive. MTO will discuss permissible submission strategies internally, and possibly with MOEE, and relate the outcome of these discussions to York Region as soon as possible. York Region noted that the Class EA for Green Lane will be completed in Spring 1996.
5. A package reviewing the background of this project will be submitted to York Region to be incorporated in a staff report to Council.

Submitted By:


Len Kozachuk, P. Eng.

LK:lk

cc: Those Present

MINUTES OF MEETING

DATE: January 26, 1995 **TIME:** 9:00 a.m.

OUR REF.: 6891

LOCATION: York Region Offices

PROJECT: Highway 404 Extension

ATTENDEES:

John Livey	York Region Planning
John Waller	York Region Planning
Michael DeAngelis	York Region Planning
Craig Piper	York Region Planning
Jeff Mark	York Region Transportation
Caroline McInnis	Town of East Gwillimbury
Steve Jacobs	MTO
Chris Ricketts	CSA

PURPOSE: Project Update

1. John Livey requested that staff present be updated on the progress of the project.
2. Chris Ricketts reviewed the progress to date. The short term schedule included:
 - Presentation of routes and interchanges to Municipal Staff (mid-late February, 1995).
 - Council presentations (March, 1995)
 - Public Information Centres (late March - early April, 1995)
 - Workshops to follow PICs.
3. John Livey noted that Urban Form needs to be addressed in the study. It was agreed that CSA would involve Sue Cumming (Senior Land Use Planner) in the study.
4. Caroline McInnis was concerned about the proximity of a route west of Woodbine to the Sharon Community. She noted that proximity effects such as noise must be addressed.
5. John Livey and John Waller voiced concerns about the impacts to the Keswick Secondary Plan. They were concerned that routing the 404 north of Ravenshoe Road and west of Woodbine Ave. would force development to occur east of the highway and such development would not have an established east limits. As such, the highway would not function as an urban boundary and development would occur both west and east of Highway 404.

Submitted by: _____

Chris Ricketts

/ks

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

MINUTES OF MEETING

DATE: February 22, 1995 **TIME:** 1:30 p.m.

OUR REF.: 6891

LOCATION: Town of Georgina Municipal Office

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

B. Magloughen	-	Georgina - Engineering
H. Lenters	-	Georgina - Planning
J. Maclean	-	Georgina - Leisure Services
S. Jacobs	-	MTO
C. Ricketts	-	CSA
L. Kozachuk	-	CSA

PURPOSE: Presentation of Route Alternatives

This meeting was held to present the work completed to date on the Highway 404 Extension EA Study, including the route alternatives (see attached). The purpose of the meeting was to identify issues and concerns related to the study in advance of a presentation to Georgina Council scheduled for February 27, 1995.

1. The study area, study background and corridors presented at the last working meeting were briefly reviewed.

The route alternatives are basically located in two major corridors located north and south of major wetland complexes located in the central study area. The northern routes provide direct access to the major growth centres in northern York Region, but have a significant impact on existing development in the vicinity of Pefferlaw. The southern routes avoid the impacts to Pefferlaw, but do not provide direct access to the growth areas and would likely generate greater natural environment impacts than the northern routes. Over the next several months, analysis and evaluation of the route alternatives will be conducted to identify a preferred alternative. The EA report will be submitted to MOEE in 1996.

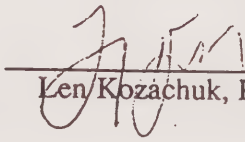
2. MTO is considering submitting the Highway 404 Extension EA in parts, to avoid delaying construction to the less controversial sections of the study area south of Queensville Sideroad. MTO will discuss permissible submission strategies with MOEE, and relate the outcome of these discussions to York Region as soon as possible. York Region has noted

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that the Class EA for Green Lane will be submitted in Spring 1996.

3. Georgina inquired as to the proposed construction/implementation schedule for the highway extension. The EA study will review staging of the undertaking, however actual construction timetables are difficult to predict due to external considerations (i.e. approvals, funding).
4. Georgina indicated that route B3B may have a significant impact on the proposed Pollock Century Farms development located on the south side of Pollock Road at Woodbine Avenue. The proposal for 39 estate residential lots has OP approval, but has not obtained draft plan of subdivision or zoning approvals.
5. The impacts associated with a proximate route alternative on Keswick and Sutton urban form were discussed. Georgina noted that route B3 in the vicinity of Sutton may place development pressures on the lands south of Highway 48 which presently are situated outside the urban service area. Georgina acknowledged that the lands east of Woodbine Avenue along route B3B would also be subject to development pressures, but that the Keswick planning boundary would be easier to defend. H. Lenters will attend the meeting with York Planning to review impacts associated with route alternatives on urban form of growth areas in York Region.
6. An information package will be prepared for Council for review in advance of the upcoming council presentation.

Submitted By:

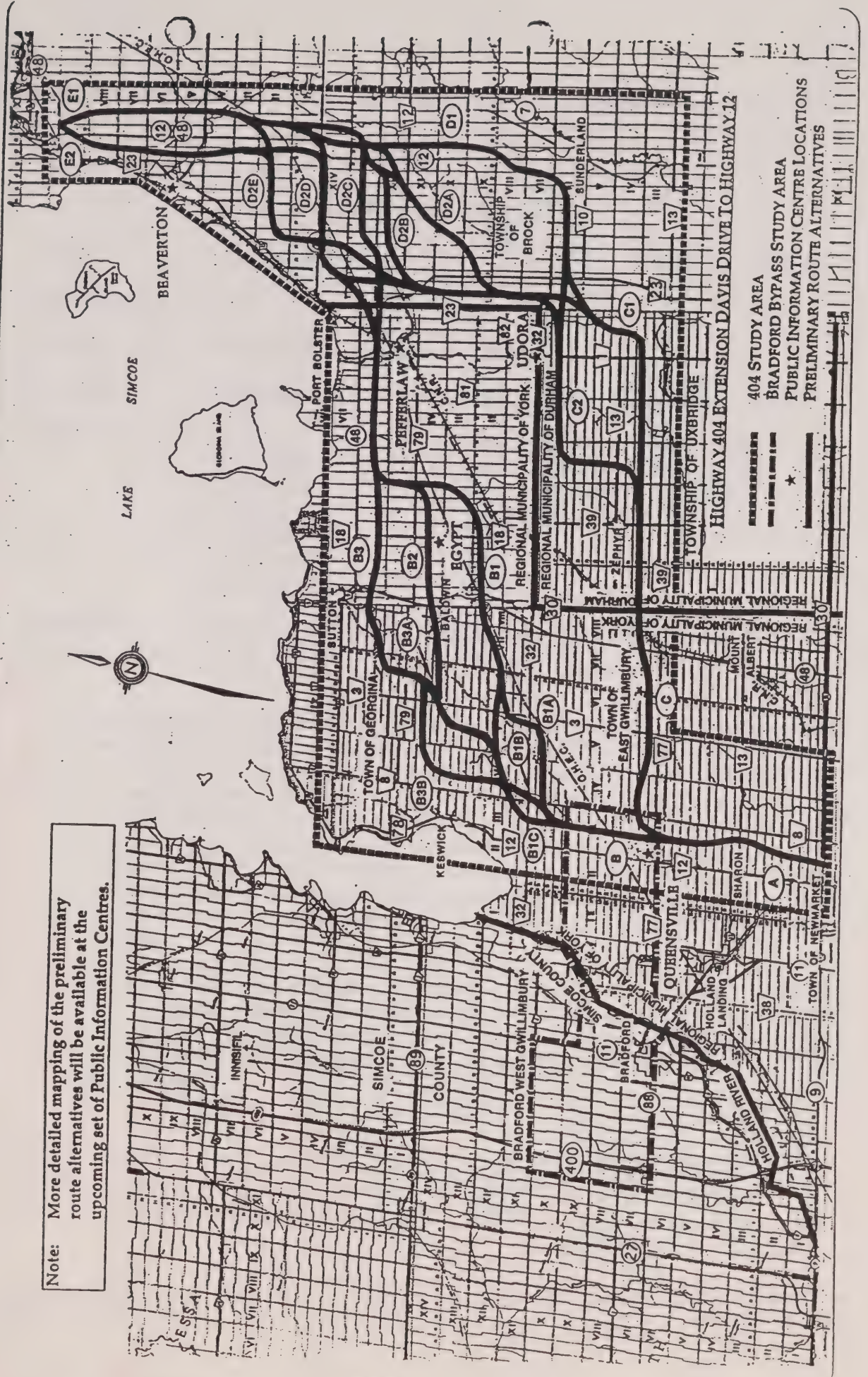


Len Kozachuk, P. Eng.

LK:cc

cc: Those Present

Note: More detailed mapping of the preliminary route alternatives will be available at the upcoming set of Public Information Centres.



MINUTES OF MEETING

DATE: August 12, 1994 **TIME:** 10:30 a.m.

OUR REF.: 6891

LOCATION: Town of East Gwillimbury Offices

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

W. Hunt	- East Gwillimbury - Engineering
R. LeClair	- East Gwillimbury - Parks & Rec.
C. Toomey	- East Gwillimbury - Planning
C. Piper	- York Region - Planning
S. Jacobs	- MTO
C. Ricketts	- CSA
L. Kozachuk	- CSA

PURPOSE: Review Impacts to Proposed Developments in Sharon

Developers of the Sharon Hills Phase III residential subdivision are eager to start construction, but approval is pending the generation of route alternatives for the proposed extension of Highway 404. The developer has forwarded plans to MTO for review to determine which portions, if any, of the subdivision are not impacted by any of the route alternatives and can be released for development. Since the subdivision is impacted by the western boundary of the corridor for route alternatives, this meeting was called to review constraints in the area with municipal staff to determine what, if any, concerns must be addressed prior to defining the western limit of the corridor.

MTO and CSA reviewed the existing constraints in the area, and outlined how the western limit of the corridor has been defined. The western limit of the corridor will impact the southeast corner of the residential subdivision, as well as the lands immediately east of the subdivision labelled "not part of this application".

<p>PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.</p>

East Gwillimbury noted that, as part of the application, the developer is dedicating the lands east of and adjacent to the proposed development as a park. East Gwillimbury expressed concern that, if the parkland is impacted by the proposed highway, the agreement between the Town and the developer may also be affected.

An in-camera presentation will be made to Council on Friday, August 26, 1994 at 11:00 a.m. to review how the western limit of the corridor was defined, and the possible impacts to the development and parkland.

Submitted By:


Len Kozachuk, P. Eng.

cc: Those Present

LK:cc

MINUTES OF MEETING

DATE: June 13, 1994 TIME: 2:30 p.m.

OUR REF.: 6891

LOCATION: Uxbridge Council Chamber

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: S. Jacobs - MTO
L. Kozachuk - CSA

PURPOSE: Presentation to Township of Uxbridge Council

A presentation was made to update Council on work completed on the Highway 404 Extension EA.

S. Jacobs introduced and briefly reviewed the background of the project.

L. Kozachuk reviewed the progress to date on the project, including:

- 1) changes to the study area;
- 2) alternative corridors for locating route alternatives;
- 3) consultation plan, including the upcoming series of public information centres.

Council raised the following questions/concerns:

- *Ensure that the workshops are held at times and locations convenient for study area residents (e.g. farmers would not likely be able to attend workshops held between 9 a.m. and 5 p.m. on weekdays).*

Workshops will be held during evening hours and/or weekends at locations in the study area.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- *The corridor which crosses through Uxbridge Township impacts wetlands and river valleys.*

The impacts of each route will be analysed and compared to impacts of other routes. Trade-offs will have to be made to select a preferred route. We are asking for the public's participation in making such trade-offs.

- *This study should coordinate with the Ontario Hydro corridor study to examine the feasibility of developing a single right-of-way to accommodate both facilities.*

This study has been coordinating with Ontario Hydro's GTR Study. The GTR Study is presently inactive.

- *Isn't there a possibility that, upon a more thorough review of the corridors, significant constraints may be discovered, requiring that the proposed corridors be changed or new corridors added?*

The proposed corridors reflect the best information we have obtained to date, but a more detailed field assessment may reveal previously unknown constraints.

We have developed several corridors so that, if one corridor is found to be no longer feasible, we can drop that corridor from further consideration and carry on with the remaining corridors.

- *What is the proposed right-of-way width for the new highway?*

The highway right-of-way generally be 100 m (300 ft) wide, but additional property will be required at interchange locations.

Council received the deputation for information.

Submitted By:


Len Kozachuk

LK:cc

MINUTES OF MEETING

DATE: June 8, 1994 TIME: 10:00 a.m.
OUR REF.: 6891
LOCATION: Durham Council Chamber
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT: S. Jacobs - MTO
C. Ricketts - CSA
PURPOSE: Presentation to Region of Durham Council

A presentation was made to update Council on work completed on the Highway 404 Extension EA.

S. Jacobs introduced and briefly reviewed the background of the project.

C. Ricketts reviewed the progress to date on the project, including:

- 1) changes to the study area;
- 2) alternative corridors for locating route alternatives;
- 3) consultation plan, including the upcoming series of public information centres. (PIC)


Council raised the following questions/concerns:

- Are farm operations or natural areas the primary constraints?
 - a. At the corridor stage we have focussed on crossing natural environment areas (predominantly wetlands) in areas where the wetland will still remain viable. The corridors are still wide enough (1 to 2 km) to allow routes to be generated within each corridor. At route generation we will attempt to minimize the impacts on farming operations.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

- What is the timing for construction?
 - a. It is anticipated that the Environmental Assessment Report will not be approved until 1997. As a result construction may not begin until the year 2000. Construction will be staged from south to north.
- Has coordination taken place between MTO and Hydro?
 - a. We have met with Ontario Hydro to discuss progress on the Ontario Hydro Transmission Line project and the Highway 404 Extension.

Submitted By:


Chris Ricketts

CR:cc

MINUTES OF MEETING

DATE: June 6, 1994 TIME: 1:00 p.m.

OUR REF.: 6891

LOCATION: East Gwillimbury Municipal Offices

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: S. Jacobs - MTO
S. Schijns - MRA
C. Ricketts - CSA

PURPOSE: Presentation to Township of East Gwillimbury

A presentation was made to update Council on work completed on the Highway 404 Extension EA.

S. Jacobs introduced and briefly reviewed the background of the project.

C. Ricketts provided an update of the Highway 404 project status including:

- 1) changes to the study area;
- 2) alternative corridors for locating route alternatives;
- 3) consultation plan, including the upcoming series of public information centres. (PIC)

S. Schijns provided an update on the Bradford Bypass Project status including:

- 1) results of the Corridor Analysis Study
- 2) alternative corridors for generating routes
- 3) alternative routes
- 4) consultation plan, including upcoming series of PIC's

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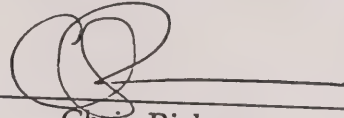
Council raised the following questions/concerns:

- The large scale map used for routes on the Bradford Bypass project is out of date.
 - a. Yes, we will try to update for future presentations.
 - What information is used to identify farm operations?
 - a. At this stage the farm operations are based on secondary data. We will be asking those in attendance at the PIC's to provide us with any farming information they may have.
 - Why was the Highway 89 Environmental Assessment cancelled in the mid 1980's.
 - a. Impacts to the Keswick marsh.
- Why do the Bradford Bypass routes "loop" to the south at the Holland River?
- a. Impacts to the south are generally less severe than those more northerly. Also a route closer to Bradford could result in more local use.
- Why is south corridor on the Highway 404 project under consideration? Keswick has the highest population in the area so why not consider the northerly route only which directly serves Keswick?
 - a. Both routes serve the major purpose of the highway which is to provide for high-speed, long-distance traffic to the east side of Simcoe. The south corridor may necessitate upgrading Woodbine, Kennedy etc. in order to allow a convenient connection for Keswick.
- What is the timing for construction?
 - a. It is anticipated that the Environmental Assessment Report will not be approved until 1997. As a result construction may not begin until the year 2000.

Comment

The community is waiting for the Highway 404 extension. It is needed as soon as possible and any efforts to speed up this study or the construction schedule would be appreciated by the community and by this council.

Submitted By:



Chris Ricketts

CR:cc

MINUTES OF MEETING

DATE: June 2, 1994 TIME: 10:30 a.m.
OUR REF.: 6891
LOCATION: Georgina Council Chamber
PROJECT: Highway 404 Extension Environmental Assessment
PRESENT: C. Ricketts - CSA
PURPOSE: Presentation to Township of Georgina Council

A presentation was made to update Council on work completed on the Highway 404 Extension EA.

C. Ricketts reviewed the progress to date on the project, including:

- 1) changes to the study area;
- 2) alternative corridors for locating route alternatives;
- 3) consultation plan, including the upcoming series of public information centres. (PIC)

Council raised the following questions/concerns:

- The Mayor commented that while he was in favour of the Highway 404 extension, care would be required in locating a facility so that it does not decimate the township.
- What type of facility is anticipated?
 - a. A Controlled access freeway similar to existing Highway 404.

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- Documentation of impacts of the Highway would be required.
 - a. We do this as part of the environmental assessment process. At the route evaluation stage we will present these impacts to Council. We will also have Workshops at the corridor, route and preliminary design stages with various levels of impacts discussed at each.
- Boards used at the Public Information Centres should be as straight forward as possible.
 - a. Agreed.
- Is an information package showing the details of the PIC materials available in advance?
 - a. No, due to the amount of detail to be presented, we would like the opportunity to explain the details to the public using the large board format. People who cannot attend the PIC, or those wishing information, will be encouraged to take a copy of the Environmental Assessment Proposal document.
- Much of the population of Georgina work south of Georgina so peak hour congestion is already a serious problem. People already stagger commute time (i.e. leave very early in the morning) and traffic is still heavy during the peak periods.

Submitted By: _____



Chris Ricketts

MINUTES OF MEETING

DATE: May 31, 1994 **TIME:** 9:30 a.m.

OUR REF.: 6891

LOCATION: York Region Municipal Offices

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: S. Jacobs - MTO
S. Schijns - MRA
L. Kozachuk - CSA

PURPOSE: Presentation to York Region Transportation and Environmental Services Committee

A presentation was made to update the Committee on work completed on the Bradford Bypass and Highway 404 Extensions EA Studies.

S. Jacobs introduced and briefly reviewed the background of both studies.

L. Kozachuk provided an update of the Highway 404 project status including:

- 1) changes to the study area
- 2) alternative corridors for locating route alternatives
- 3) consultation plan, including the upcoming series of public information centres.

S. Schijns provided an update on the Bradford Bypass Project status including:

- 1) results of the Corridor Analysis Study
- 2) alternative corridors for generating routes
- 3) alternative routes
- 4) consultation plan, including upcoming series of PIC's.

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Committee members commented on the length of time spent studying transportation problems in the area with no preferred routes having yet been identified.

It was suggested by Committee members that the location of the proposed Highway 404 Extension as indicated in the Draft York Region O. P. be revised to reflect the change in study area for the Highway 404 Extension Study.

The committee also raised the issue of improving Green Lane to provide a by-pass of Newmarket and a connection between Highways 400 and 404.

Committee motioned to accept the information presented, and have York Region staff prepare a report updating the feasibility of the Green Lane/Herald Road Bypass, incorporating the information presented today.

Submitted By:


Len Kozachuk

LK:cc

cc: Those Present

MINUTES OF MEETING

DATE: May 30, 1994 TIME: 10:00 a.m.

OUR REF.: 6891

LOCATION: Brock Council Chamber

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT: S. Jacobs - MTO
C. Ricketts - CSA

PURPOSE: Presentation to Township of Brock Council

A presentation was made to update Council on work completed on the Highway 404 Extension EA.

C. Ricketts reviewed the progress to date on the project, including:

- 1) changes to the study area;
- 2) alternative corridors for locating route alternatives;
- 3) consultation plan, including the upcoming series of public information centres.

Council raised the following questions/concerns:

- Council noted that there would likely be very distinct tradeoffs between the northerly and southerly corridors.
- East of Lake Simcoe what are the options for the new facility?
 - a. Both a new freeway and a twinning of Highway 12 will be considered.
- Is the connection to highway 7(east) important?
 - a. Our modelling of future traffic patterns indicate that the predominant demand is North-South (around Lake Simcoe). As a result, the

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connection to Highway 7 (an East-West demand) is considered of secondary importance when considering possible corridors.

- Will this be a Toll facility?
 - a. At present the facility is not being considered as a toll road.
- Will the new highway cause development?
 - a. Development is controlled by Official Plans/Secondary Plans at a municipal level and not by the MTO. The MTO is responding to transportation needs specified in the official plans and is trying to provide the necessary transportation infrastructure.

Submitted By: _____


Chris Ricketts

CR:cc

MINUTES OF MEETING

OUR REF: 6891

DATE: May 24, 1994 **TIME:** 1:00 p.m.

LOCATION: East Gwillimbury Offices

RE: Municipality Meeting (Prior to 2nd set of Council Meetings and Public Information Centres)

PROJECT: Highway 404 Extension

PRESENT:

Jeff Mark	-	York Region
Brian Harrison	-	York Region
John Linhardt	-	East Gwillimbury
Rick Netherly	-	Town of Newmarket
Roy Howard	-	Town of Newmarket
Thom Gettinby	-	Totten Sims Hubicki Assoc. (for Brock Twsp)
Velvet Ross	-	Town of Georgina
Robert Magloughlen	-	Town of Georgina
Lorne Wall	-	Township of Uxbridge
Wayne Hunt	-	Town of East Gwillimbury
Harold Dalkie	-	Region of Durham
Steve Jacobs	-	MTO
Chris Ricketts	-	Cole, Sherman

1. Steve Jacobs and Chris Ricketts made a presentation which outlined the main themes of the upcoming council presentations and Public Information Centres, including:
 - The north study limit has been shifted northerly. The previous limit was Ravenshoe Rd; the new northern limit is Lake Simcoe (through Georgina) and Lake Simcoe/Highway 48 East (through Brock).
 - The south study limit has also been shifted northerly from the Mt. Albert Sideroad area to the Queensville Sideroad/RR 13 area.
 - Constraints have been mapped which show a fabric consisting of 3 predominant areas including agricultural, wetland complexes and community modes. It was noted that agriculture is relatively homogeneous throughout the study area. Therefore, agricultural constraints have not been used to site corridors. However, at the route generation stage, impacts to individual and linked farm operations will be minimized wherever possible.
 - An extended consultation plan is proposed which endeavours to involve more of the community. Workshops and group or community meetings will be offered.

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2. The study had recently commenced the phase in which alternatives were generated. It was noted that the natural features generally are oriented north-south. South of Lake Simcoe, the extension of Highway 404 will be oriented east-west and as a result no naturally benign alternatives exist. As a result, a two stage process is proposed to generate routes.

Stage 1: Opportunity Areas

Utilizing secondary data collected from the Ministry of Natural Resources and Lake Simcoe Region Conservation Authority, a natural constraints map (1:30,000 scale) had been developed. The level of detail on this map was consistent throughout the study area.

The natural features were then analyzed, surface and subsurface, and the wetlands complexes. (For example, aerial mapping may indicate a series of small, scattered areas of wetland. However, if these areas are sub-surface linked, they would be considered one contiguous complex).

Once the wetlands were complexed, opportunity areas for possible highway crossings were identified. Typically, opportunity areas include:

- Areas with existing disturbances such as a road, hydro or rail crossing;
- Areas where the complex is narrow;
- Areas near the fringe of the complex.

The opportunity areas were then superimposed on a map of built-up areas. Potential 'corridors' were developed which avoided the built-up areas and either avoided natural features or crossed the features within the opportunity areas. The corridors have been left as wide as possible, typically 1 to 2 kilometres in width.

Stage 2: Route Generation

For the corridors identified in stage 1, a more detailed level of information will be collected from additional sources and field investigation. Agricultural details such as farm operations and linked farming operations will also be collected.

This data, along with other data from all areas of the environment will be mapped onto a 1:10,000 scale map in the corridor areas. Using applicable highway design standards, routes will be generated which attempt to minimize impacts.

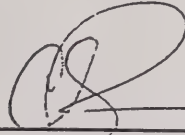
The routes will be analyzed, refined and mitigated before the evaluation of the preferred route.

3. Stage 1 of the above process was presented and the corridor opportunities discussed. The Municipal Team agreed with the generation process and the level of detail assumed at this stage.
4. The discussion focused on suggestions for council on public presentations including:
 - Continuous corridors should be outlined on top of the corridor opportunity areas on the display board.
 - A list of agencies consulted and the current state of involvement may be useful.
 - In areas where draft secondary plans are currently in progress, the future community boundaries should be adjusted to agree.

5. Questions included:

- Why are only corridors being presented at this time, rather than detailed routes?
- Why wasn't the study area changed as requested by Newmarket to include Highway 9 and Green Lane?

Submitted by:



Chris Ricketts

CR:cc

MINUTES OF MEETING

DATE: April 25, 1994

OUR REF. 6891

LOCATION: Town of Georgina

PROJECT: Highway 404 Extension Environmental Assessment

PRESENT:

R. Martiuk	-	Town of Georgina
H. Lenters	-	Town of Georgina
R. Magloughlen	-	Town of Georgina (part-time: Item 1)
C. Ricketts	-	Cole, Sherman & Associates
M. Bricks	-	Cole, Sherman & Associates

1. PROJECT SCHEDULE

R. Magloughlen requested that Cole, Sherman provide the Town with an update of the project schedule for council's information.

The following represents the major tasks that have to be completed and an estimated completion date:

- | | |
|---|---------------------|
| • Route Generation | June, 1994 |
| • Second Series of Public Information Centres | mid-June, 1994 |
| • Assessment of Impacts | Summer/Fall, 1994 |
| • Evaluation of Route Alternatives | Fall/Winter, 1994 |
| • Selection of Recommended Alternatives | Winter, 1995 |
| • Third Series of Public Information Centres | Winter, 1995 |
| • Route Refinement and Mitigation | Spring, 1995 |
| • Fourth Series of Public Information Centres | Spring/Summer, 1995 |
| • Review of Draft E.A. Report | Fall, 1995 |
| • Submission of Final E.A. Report to MOEE | Spring, 1996 |

Council presentations will be arranged to correspond with each series of Public Information Centres.

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It was recommended by the Town that the Council presentation for the upcoming series of Public Information Centres be held on June 2, 1994.

2. ROUTE GENERATION

Through a series of overlay mapping of social, natural and economical features of the study area, the Project Team is identifying opportunity areas for route generation.

The opportunity area in the Town of Georgina extends north-south in the Woodbine Avenue area and east-west in the Highway 48 area. The benefits of this opportunity area are the low natural environment impacts and good service to Keswick and the development along the south shore of Lake Simcoe. The disadvantage of this opportunity area is the potential impact to Keswick and Pefferlaw and potential impact to agricultural lands.

3. DEVELOPMENT IN THE TOWN OF GEORGINA

H. Lenters noted that a major constraint to the proposed development of Keswick is a lack of road capacity on Woodbine Avenue and Leslie Street. The extension of Highway 404 will benefit the development of this area.

It was further noted that route alternatives in the Town should attempt to avoid direct impacts to the boundary of Keswick, but if this is not possible, these impacts should be minimized.

H. Lenters also noted that the majority of growth in Georgina will be focused in Keswick and, although growth will occur on the south shore of Lake Simcoe, it will be small in comparison.

C. Ricketts noted that the opportunity area through Georgina would have to pass through Pefferlaw.

H. Lenters stated that this crossing would have impacts to the proposed Pefferlaw Secondary Plan. To minimize impacts, it was suggested that Highway 48 should be widened or the route generated should be as close to Highway 48 as possible.

Highway 48 could not be feasibly widened to serve as a long-distance inter-regional facility because of the numerous private accesses and the conflict that would result between local and long-distance trips.

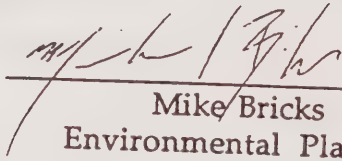
4. OTHER BUSINESS

H. Lenters agreed to forward a copy of the draft Pepperlaw Secondary Plan to Cole, Sherman for review.

The Town's mapping of natural features are obtained from the same sources as the Project Team's and, therefore, were not requested.

Cole, Sherman will follow-up with R. Martiuk to obtain approval to review some of the reports dealing with the agricultural base of the Town produced in response to the proposed IWA landfill.

Submitted by:


Mike Bricks
Environmental Planner

MB/ih

cc: Those present
S. Jacobs - MTO
H. Pearson - MTO

MINUTES OF MEETING

DATE: April 13, 1994
OUR REF.: 6891
LOCATION: Georgina Offices
PROJECT:
PRESENT: R. Magloughlen - Georgina
H. Lenters - Georgina
Steve Jacobs - Ministry of Transportation
Chris Ricketts - Cole, Sherman
RE: Update Study Area for Highway 404 Extension

1. S. Jacobs and C. Ricketts explained that the corridor assessment stage of the Highway 404 EA had concluded that the study area should be modified. Instead of the northern limit being Ravenshoe Road, the study area would be extended to Lake Simcoe. Obviously this could have potential impacts to the Town of Georgina.
2. Given the change in location, R. Magloughlen would talk to the Mayor to see if a council presentation should be entertained before the June PIC.
3. It was agreed that C. Ricketts would meet with H. Lenters in the near future to review data available from the Town.
4. H. Lenters noted that both the Keswick and Pefferlaw Secondary Plans would be available in the near future.

Submitted by: 

Chris Ricketts, P.Eng.
Project Manager

CR:cc

cc: Those Present

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MINUTES OF MEETING

DATE: Tuesday, October 12, 1993 **TIME:** 10:00 a.m.
OUR REF.: 6891
LOCATION: Town of East Gwillimbury - Municipal Offices
PROJECT: Highway 404 - Extension Environmental Assessment
PRESENT: C. McInnis - Town of East Gwillimbury
M. Bricks - CSA
PURPOSE: Land Use Constraints in the Town of East Gwillimbury

M. Bricks briefly outlined the study and stated that the purpose of this meeting was to determine land use constraints in the Town.

C. McInnis noted that the Sharon Community Plan outlines the boundary of the community and stated that this boundary should be considered a constraint to highway development. This boundary is located approximately 500 m west of Woodbine Avenue. Ms. McInnis also noted the presence of a woodlot between Sharon and Woodbine Avenue that is considered of some significance. As such, it was suggested that an alignment east of Woodbine Avenue should be considered.

Ms. McInnis stated that the Queensville Community Plan was not approved by the Ministry of Municipal Affairs because servicing for the projected population did not exist. It was noted that the community boundary outlined should be considered as a constraint because the Town still intends to ultimately develop the area.

A brief discussion of potential interchange locations revealed that Ms. McInnis did not favour an interchange location at Mount Albert Sideroad because:

- of the proximity to Herald Road;
- Mount Albert Sideroad is not continuous (considering the jog at Leslie Street); and,

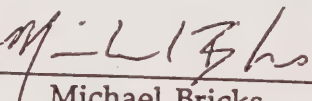
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- an interchange at this location would result in traffic increases along Mount Albert Sideroad that would negatively affect the communities of Sharon and Holland Landing.

Following these discussions, development applications in the Town were discussed. Ms. McInnis noted that the Town recently received an application for a cemetery on Woodbine Avenue north of the golf course (Conc. IV, Lot 8). It was stated that the Town has deferred a decision on this application pending route generation by the MTO. The status of current development applications were reviewed in light of a recent study conducted by the Town on rural estate development. Development applications which will be approved by the Town will be considered during route generation.

Ms. McInnis inquired as to the Town's involvement during the route generation and interchange selection process. It was stated that MTO would hold meetings with Municipal Staff and Council prior to the next series of Public Information Centres (February, 1994).

Submitted by:


Michael Bricks

MB:cc

cc: S. Jacobs - MTO
H. Pearson - MTO
C. Ricketts - CSA
C. McInnis - Town of East Gwillimbury

MINUTES OF MEETING

DATE: September 27, 1993 **TIME:** 10:00 A.M.
OUR REF.: 6891
LOCATION: Brock Offices
PROJECT: Highway 404 Extension
PURPOSE: First Council Presentation to Brock Council
PRESENT: Brock Council, et al.
 Steve Jacobs - Ministry of Transportation
 Chris Ricketts - Cole, Sherman

1. A brief presentation was made introducing the Highway 404 Extension Environmental Assessment. The presentation covered:
 - Background
 - Study Organization
 - Study Process
 - Results of Public Information Centre

Also included was the concept of an Environmental Assessment Proposal (EAP) which is a scoping document which will allow all interested parties to review, up front, the scope and schedule for the project. The draft EAP has been provided to the Township of Brock and a copy for public input will be made available through the Clerk's office.

2. Questions and comments made by council have been summarized below:

Q Please explain the development freeze in the study area?

A A freeze on subdivision development and severance's has been enacted to enable the Ministry of Transportation to determine a suitable right-of-way for the proposed roadway improvements within the Study Area. By freezing development, the Ministry hopes to reduce the likelihood of impacting on large-scale projects and allow for as many options in locating the proposed improvements as possible.

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Once the set of proposed routes has been identified, the development freeze will be lifted on those areas not affected by the alternative route proposals. The Ministry of Transportation will complete its selection of route proposals by the end of this year, and will present them to the public at the second round of Public Information Centres in early 1994.

Once the final route has been determined in late 1994, only lands identified as being required for the proposed route will be subject to development restrictions.

Q Will widening of existing roads be considered?

A Yes. As a result of the Alternatives to the undertaking analysis, two "alternatives To" remain

- i) Roadway Infrastructure Additions (New Infrastructure).
- ii) Combination of Roadway Infrastructure Additions, Roadway Infrastructure Improvements (upgrade existing), and Roadway Operational Improvements.

Comment: As an extension to Highway 404, the new highway should be to the same freeway standards as existing Highway 404.

Q What is the timing for this study?

A Routes presented in early 1994. Preferred route presented in Fall 1994 and draft Environmental Assessment Report in Spring of 1995.

Q Why was the presentation not made to Brock Council prior to the PIC?

A We were under the impression that Brock did not want a presentation and that the councillors would be updated by a fact-sheet.

Comment: The Highway 404 extension is important to the Township. Council requests presentations before each PIC and will advise Cole, Sherman who will be their representative on the municipal team.

Submitted By: _____

Chris Ricketts
Consultant Project Manager

MINUTES OF MEETING

DATE: July 14, 1993 3:00 pm
OUR REF.: 6891
LOCATION: Uxbridge Offices
PROJECT: Highway 404 Extension
PRESENT: Uxbridge Council et al.
Steve Jacobs - Ministry of Transportation
Chris Ricketts - Cole, Sherman
PURPOSE: Council Presentation prior to PIC #1

ACTION

1. A brief presentation was made introducing the Highway 404 Extension Environmental Assessment. The presentation covered:

- Background
- Study Organization
- Study Process
- Upcoming Public Information Centre

Also included was the concept of an Environmental Assessment Proposal (EAP) which is a scoping document which will allow all interested parties to review, up-front, the scope and schedule for the project. The draft EAP has been provided to the Township of Uxbridge and a copy for public input will be made available through the clerk's office.

2. Questions followed as summarized below.

- Q) Is this study in any way connected to the IWA landfill initiative?
- A) No. The purpose of this study is to identify a route to protect for the future highway extension. It is anticipated that the actual construction of the highway will not take place until late in the landfill's life span.

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Q) Please explain the development freeze in the study area?

A) A freeze on subdivision development and severance's has been enacted to enable the Ministry of Transportation to determine a suitable right-of-way for the proposed roadway improvements within the Study Area. By freezing development, the Ministry hopes to reduce the likelihood of impacting on large-scale projects and allow for as many options in locating the proposed improvements as possible.

Once the set of proposed routes has been identified, the development freeze will be lifted on those areas not affected by the alternative route proposals. The Ministry of Transportation will complete its selection of route proposals by the end of this year, and will present them to the public at the second round of Public Information Centres in early 1994.

Once the final route has been determined in late 1994, only lands identified as being required for the proposed route will be subject to development restrictions.

Q) Will widening of existing roads be considered?

A) Yes. As a result of the Alternatives to the undertaking analysis, two 'Alternatives To' remain

i) Roadway Infrastructure Additions (New Infrastructure).

ii) Combination of Roadway Infrastructure Additions, Roadway Infrastructure Improvements (upgrade existing), and Roadway Operational Improvements.

Q) What is the timing for this study?

A) Routes presented in early 1994. Preferred route presented in Fall 1994 and draft Environmental Assessment Report in Spring of 1995.

Submitted by:



Chris Ricketts, P.Eng.
Project Manager

cc: Those Present

MINUTES OF MEETING

- DATE:** May 27, 1993 9:00 am
- PROJECT:** Highway 404 Extension/Bradford Bypass Environmental Assessment
- LOCATION:** CSA Offices
- OUR REF.:** 6891
- PRESENT:**
- | | |
|----------------|--------------------------------|
| S. Jacobs | - MTO - Central Region |
| Bill Rhamey | - MTO - TDFO |
| Paul May | - York Region - Transportation |
| Joe Au | - York Region - Transportation |
| Jim Bate | - Durham Region - Planning |
| Chris Ricketts | - Cole, Sherman & Associates |
| Yannis Stogios | - Cole, Sherman & Associates |
- PURPOSE:** Highway 404 Extension — Demand Forecasting.
-
1. The purpose of the meeting was to discuss:
 - The Study Design for the demand forecasting/modelling part of the project.
 - Information that might be available from MTO and the Regions.
 2. CSA handed out copies of the Study Design for the demand forecasting and briefly presented the proposed work plan.
 3. CSA advised that certain traffic counts required for the expansion of the 1990 Origin-Destination Survey are missing. York Region suggested that CSA compile a list of these locations, and they will provide whatever counts they have for these or nearby locations. York Region confirmed that they have a permanent counting station on Woodbine Avenue.
 4. Recent CSA work with the MTO EMME/2 networks revealed some errors in the coding of roads in York Region. CSA suggested that opportunities of using York Region's EMME/2 networks should be considered, since York Region staff


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have already undertaken a thorough review of the regional network as part of their recently completed Travel Demand Modelling study. Durham Region staff are also planning to undertake a similar review of their network.

It was agreed that for purposes of this study and because of time constraints, the consultant should undertake a review and comparison of the MTO and York networks. In their review, CSA should identify the differences between the networks, correct any errors, and discuss any discrepancies with MTO and the Regions before finalizing networks to be used in the study.

5. The Region of York noted that the 2011 horizon, set by the Terms of Reference of the study, might be too short for the purposes of such project. The participants recognized that an ultimate horizon year should also be examined to determine the need and the type of the proposed facility under ultimate development conditions in the area affected by the new facility. Land use information for such ultimate conditions could be obtained from the Highway 404/89 Transportation Infrastructure Planning Study (1989), Region of Durham studies and Region of York new land use forecasts.
6. Other discussion topics included:
 - Whether the scope of work for the demand forecasting should include an area-wide assessment of traffic patterns to establish the effect of other regional initiatives (e.g. extension of Highway 407 into Durham), or only provide demand forecasts for the proposed facility under certain assumptions for the rest of the network.
 - Whether MTO's gravity model should be used for trip distribution instead of the Fratar method proposed by CSA.

Submitted by: _____


Yanis C. Stogios

YS/tm

6891

MINUTES OF MEETING

DATE: May 20, 1993 2:30 pm

PROJECT: Highway 404 Extension Environmental Assessment

LOCATION: Town of Georgina Civic Centre

OUR REF.: 6891

PRESENT: Robert Magloughlen - Town of Georgina, Town Engineer
Harold Lenters - Town of Georgina,
Director of Development Services
Steve Jacobs - MTO Project Manager
Heather Pearson - MTO Environmental Planner
Chris Ricketts - Cole, Sherman

PURPOSE: Municipal Introduction

1. A brief presentation was made introducing the Highway 404 Extension Environmental Assessment. The presentation covered:

- Background
- Study Organization
- Study Process
- Study Schedule

Also included was the concept of an Environmental Assessment Proposal (EAP) which is a scoping document which will allow all interested parties to review, up-front, the scope and schedule for the project. The draft EAP's will be forwarded to the Town of Georgina for comment and a copy for public input will be made available through the clerk's office.

2. A written notification of study start-up including the dates for the upcoming June 1993 Public Information Centre will be sent to the clerk. A council presentation will be made only if requested by the clerk.
3. R. Magloughlen stated that the Highway 404 extension has always been

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supported by the Town of Georgina and he is disappointed that the project has been delayed until now.

4. Comments by Georgina include:

- The timing of the first set of Public Information Centres (June 1993) is unfortunate as it may be misconstrued that the highway extension is associated with the IWA's study for locating the landfill site.
- Coordination with the Hydro Environmental Assessment may be useful, especially from a data collection point of view.

Submitted by: _____
C. Ricketts

CR:sp

00-1
USA
File

MINUTES OF MEETING

DATE: May 14, 1993 10:00 am

PROJECT: Highway 404 Extension and Bradford Bypass
Environmental Assessments

LOCATION: Town of East Gwillimbury

OUR REF.: 6891

PRESENT:

Wayne Hunt	- Town of East Gwillimbury - Town Engineer
John Linhardt	- Town of East Gwillimbury - Planner
Steve Jacobs	- MTO Project Manager (both projects)
Terry Steele	- MTO Envir. Planner (Bradford Bypass)
Heather Pearson	- MTO Envir. Planner (Hwy. 404 Extension)
Steve Schijns	- McCormick Rankin (for Bradford Bypass)
Chris Ricketts	- Cole, Sherman (for Highway 404 Extension)

PURPOSE: Municipal Introduction

1. A joint presentation was made introducing both the Highway 404 Extension Environmental Assessment and the Bradford Bypass Environmental Assessment. The presentation covered:
 - Background
 - Study Organization
 - Study Process
 - Study Schedule
2. S. Jacobs introduced the concept of an Environmental Assessment Proposal (EAP) which is being incorporated on both projects. The EAP is a scoping document which will allow all interested parties to review, up-front, the scope and schedule for the project. The draft EAPs will be forwarded to the Town for comment and a copy for public input will be made available through the clerk's office.

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3. W. Hunt to ask Council if a Council presentation is required prior to the first Public Information Centre (scheduled for late June/93). If yes, the deputation will be made on June 7/93.
4. W. Hunt questioned the Queensville location for the PIC. He felt that holding the meeting at the East Gwillimbury Offices in Sharon would better serve the community. However, it is too late to change the location for the June meeting. It was agreed that W. Hunt will ask for council's direction in selecting the East Gwillimbury location for the following series of PICs.
5. W. Hunt suggested that if the widening of Queensville Sideroad is to be considered as an alternative, then it would affect travel patterns in Holland Landing. As a result, why isn't all of Holland Landing included as part of the study area. S. Jacobs answered that the study area has been set to include the section of Holland Landing which could receive physical impacts or property impacts.

W. Hunt asked the study team to consider adding all of Holland Landing to the mailing list for PIC notification.

6. J. Linhardt asked when the MTO could designate the recommended route. S. Jacobs answered that no designation can take place until the Environmental Assessment is approved by the Ministry of the Environment and Energy.
7. The question arose as to who would be the proponent for the widening of Green Lane. The York Region report, Highway 11 Study for Provincial Highway Transfer indicated that if Highway 9 was extended to Highway 404 or Woodbine Avenue, it may be a MTO undertaking. On the other hand it had been the project team's understanding that the Region was undertaking a Municipal Environmental Assessment for the widening of Green Lane.

Based on this assumption, the MTO had separated the Highway 404 Extension into two segments, divided at Green Lane. This was to ensure that if the Region widened Green Lane in the near future, MTO could submit the Davis Drive to Green Lane segment in advance of the section to Highways 7/12. The MTO had also assumed that the short south segment would likely get faster MOE review and approval than the entire project.

Since the Green Lane issue has not been resolved it is likely that the Highway 404 Extension will not be separated into two segments but be handled as a single project from Davis Drive to Highways 7/12. Staging options for construction timing would be considered as part of the Environment Assessment.

8. A list of information requested from the Town was presented. The Town agreed to provide the information within a month.

9. It was agreed that W. Hunt would act as the engineering representative and J. Linhardt the planning representative on the Municipal Team for both projects.

Submitted by: _____


C. Ricketts

CR:sp

6891
CSA file

MINUTES OF MEETING

DATE: May 13, 1993 1:30 pm
PROJECT: Highway 404 Extension Environmental Assessment
LOCATION: Town of Newmarket Offices
OUR REF.: 6891
PRESENT: Roy Howard - Town of Newmarket Engineering
Rick Netherly - Town of Newmarket Planning
Steve Jacobs - MTO Project Manager
Heather Pearson - MTO Environmental Planner
Chris Ricketts - Cole, Sherman
PURPOSE: Municipal Introduction

1. A brief presentation was made introducing the Highway 404 Extension Environmental Assessment. The presentation covered:

- Background
- Study Organization
- Study Process
- Study Schedule

Also included was the concept of an Environmental Assessment Proposal (EAP) which is a scoping document which will allow all interested parties to review, up-front, the scope and schedule for the project. The draft EAP's will be forwarded to the Town of Newmarket for comment and a copy for public input will be made available through the clerk's office.

2. A written notification of study start-up including the dates for the upcoming June 1993 Public Information Centre will be sent to the clerk.
3. R. Howard questioned if the study could be separated into 2 segments, split at Green Lane. He felt that this would be

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consistent with the findings of the recent "Highway 11 Study for Provincial Highway Transfer" report by York Region. A discussion ensued which focused on the argument that the MTO would split the project if an Environmental Assessment was evoked for the upgrading of Green Lane. If Green Lane is upgraded and timing becomes an issue, the MTO is willing to submit the EA for the segment of Highway 404 extension from Davis Drive to Green Lane. It was noted that nothing in the Highway 404 schedule or scope precludes advance submission of the segment to Green Lane.

4. A list of information requested from the Town of Newmarket was presented. R. Netherly will forward the municipal and planning information and R. Howard will put together a package of engineering information.

Submitted by: _____


C. Ricketts

CR:sp

CSA File

MINUTES OF MEETING

DATE: May 10, 1993 10:00 am

PROJECT: Highway 404 Extension and Bradford Bypass
Environmental Assessments

LOCATION: Region of York - Engineering Office

OUR REF.: 6891

PRESENT:

Ron Gee	- Region of York Engineering
Jeff Mark	- Region of York Engineering
Paul May	- Region of York Engineering
Helen Psathas	- Region of York Planning
Paul Bottomly	- Region of York Planning
Steve Jacobs	- MTO Project Manager
Heather Pearson	- MTO Environmental Planner
Steve Schijns	- McCormick Rankin
Chris Ricketts	- Cole, Sherman

PURPOSE: Municipal Introduction

1. A joint presentation was made introducing both the Highway 404 Extension Environmental Assessment and the Bradford Bypass Environmental Assessment. The presentation covered:
 - Background
 - Study Organization
 - Study Process
 - Study Schedule
2. S. Jacobs introduced the concept of an Environmental Assessment Proposal (EAP) which is being incorporated on both projects. The EAP is a scoping document which will allow all interested parties to review, up-front, the scope and schedule for the project. The draft EAPs will be forwarded to the Region of York for comment and a copy for public input will be made available through the clerk's office.

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

3. The Region felt that a Regional Council presentation would not be required prior to the first Public Information Centre (scheduled for late June/93). However, a written notification of study start-up and a copy of the EAP will be sent to the clerk.
4. J. Mark felt that the future configuration of Green Lane will be raised as an issue during these studies. S. Jacobs commented that the Bradford Bypass and a Highway 9 extension through Green Lane serve two distinct functions and that Highway 9 would not be considered as an alternative corridor in the Bradford Bypass.
5. The question arose as to who would be the proponent for the widening of Green Lane. The Region felt that if Highway 9 was extended to Highway 404 or Woodbine Avenue, it may be a MTO undertaking. On the other hand it had been the project team's understanding that the Region was undertaking a Municipal Environmental Assessment for the widening of Green Lane.

Based on this assumption, the MTO had separated the Highway 404 Extension into two segments, divided at Green Lane. This was to ensure that if the Region widened Green Lane in the near future, MTO could submit the Davis Drive to Green Lane segment in advance of the section to Highways 7/12. The MTO had also assumed that the short south segment would likely get faster MOE review and approval than the entire project.

Since the Green Lane issue has not been resolved it is likely that the Highway 404 Extension will not be separated into two segments but be handled as a single project from Davis Drive to Highways 7/12. Staging options for construction timing would be considered as part of the Environment Assessment.

6. A list of information requested from the Region of York was presented. Cole, Sherman will contact P. May to set up a separate traffic meeting to review Regional data.

Submitted by: _____
C. Ricketts

APPENDIX 8

**AGRICULTURAL IMPACTS OF
PREFERRED ROUTE**



HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹	Mitigation	Net Impacts
1003800	Lot 1, Con 3, Township of East Gwillimbury	Medium Value Horse Operation	Displacement of approx. 20 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
10722000	Lot 2, Con 3, Township of East Gwillimbury	Cultivated Farm	Displacement of approx. 4ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10727200	Lot 3, Con 3, Township of East Gwillimbury	Medium Value Horse Operation	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10732800	Lot 4, Con 3, Township of East Gwillimbury	Low Value Operation (Abandoned)	Displacement of approx. 4 ha (less than 25% of the total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
2250300	Lot 6, Con 3, Township of East Gwillimbury	Cultivated Farmland	Complete displacement and landlocking of farmland.	Compensation for entire farm operation at fair market value.	Loss of an agricultural operation.
2255300	Lot 7, Con 3, Township of East Gwillimbury	Medium Value Cash Crop Operation	Displacement and landlocking of approx. 3 ha (less than 25%) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
2260300	Lot 7 and 8, Con 3, Township of East Gwillimbury	Low Value Horse Operation	Displacement and landlocking of approx. 12 ha (25% to 50% of total) of cultivated farmland. Encroachment on farm buildings (within 100 m).	Compensation for the displaced and landlocked farmland and for the encroachment on the farm buildings.	Loss of an agricultural operation (capital investment) ³
22108900	Lot 8 and 9, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
2270800	Lot 8, 9 and 10, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement and landlocking of approx. 21 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	Impact to farm viability.
2883200	Lot 13 and 14, Con 3, Township of East Gwillimbury	Low Value Operation	Displacement and landlocking of approx. 10 ha (less than 25% of total) of cultivated farmland. Encroachment on farm buildings.	Compensation for the displaced and landlocked farmland.	Loss of an agricultural operations (capital investment)
2774800	Lot 14, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
28433000	Lot 15, Con 3, Township of East Gwillimbury	Low Value Beef Operation	Displacement and landlocking of approx. 7 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
3247000	Lot 16, Con 3, Township of East Gwillimbury	Low Value Beef Operation	Displacement and landlocking of approx. 8 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
3257000	Lot 17, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 8 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
3262000	Lot 17, 18, 19, Con 3, Township of East Gwillimbury	Medium Value Dairy Operation	Displacement of approx. 10 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ^{1,2}	Mitigation	Net Impacts
3230100	Lot 20, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 7 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3409000	Lot 20, Con 3, Township of East Gwillimbury	Medium Value Operation	Displacement of approx. 7 ha (less than 25% of total) of cultivated farmland. Encroachment on farm buildings.	Compensation for the displaced farmland at fair market value.	Loss of an agricultural operation (capital investment).
3475300	Lot 21, Con 3, Township of East Gwillimbury	Low Value Operation	Displacement of approx. 5 ha (less than 25% of total) of cultivated farmland. Encroachment on farm buildings.	Compensation for the displaced farmland at fair market value.	Loss of an agricultural operation (capital investment).
3483700	Lot 21, Con 3, Township of East Gwillimbury	Low Value Operation	Displacement and landlocking of approx. 15 ha (25% to 50% of total) of cultivated farmland. Encroachment on farm buildings.	Compensation for the displaced and landlocked farmland.	Loss of an agricultural operation (capital investment).
3622000	Lot 22, Con 3, Township of East Gwillimbury	Low Value Operation	Displacement of approx. 2 ha (less than 25% of total) of uncultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3599000	Lot 22 and Lot 23, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 5 ha (less than 25% of total) of cultivated farmland. Continued access to separated fields requires re-routing.	Compensation for the displaced farmland at fair market value and for the necessary re-routing.	No net impact.
3626200	Lot 23 and 24, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 4 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3634000	Lot 25, Con 3, Township of East Gwillimbury	Low Value Operation (Abandoned)	Displacement of approx. 4 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3880000	Lot 28, Con 3, Township of East Gwillimbury	Medium Value Dairy Operation	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
38852000	Lot 27, Con 3, Township of East Gwillimbury	Medium Value Operation (Storage)	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3854000	Lot 28, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
38545000	Lot 27, Con 3, Township of East Gwillimbury	High Value Cash Crop Farm	Displacement of approx. 4 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3920200	Lot 31, Con 3, Township of East Gwillimbury	Low Value Beef Operation	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3925200	Lot 31, Con 3, Township of East Gwillimbury	Low Value Operation (Abandoned)	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3959000	Lot 32, Con 3, Township of East Gwillimbury	Low Value Beef Operation	Displacement and landlocking of approx. 5 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹	Mitigation	Net Impacts
3067000	Lot 32, Con 3, Township of East Gwillimbury	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3980000	Part Lot 32 and 33, Con 3, Township of East Gwillimbury	Cultivated farmland	Displacement of approx. 1 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
836900	Lot 33, Con 3, Township of East Gwillimbury	Uncultivated Farmland	Displacement of approx. 6 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
397000	Lot 34, Con 3, Township of East Gwillimbury	Low Value Beef Operation	Complete displacement and landlocking of farmland (no access from roadway). Encroachment on farm buildings.	Compensation for entire farm operation at fair market value.	Loss of an agricultural operation (separation and capital investment).
6940000	Part Lot 34, Con 4, Township of East Gwillimbury	Uncultivated Farmland	Complete displacement of farm operation (15 ha of uncultivated farmland).	Compensation for entire farm operation.	Loss of an agricultural operation.
10001200	Lot 1, Con 4, Township of Georgina	Uncultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of uncultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10072400	Lot 1, Con 4, Township of Georgina	Uncultivated Farmland	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10084900	Lot 2, Con 4, Township of Georgina	High Value Cash Crop Operation	Displacement of approx. 1 ha (less than 25% of total) of cultivated farmland. Encroachment on high value farm buildings (within 100 m).	Compensation for the displaced property and for encroachment on farm buildings.	Loss of an agricultural operation (capital investment).
10123700	Lot 3, Con 4, Township of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 5 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10203200	Lot 4, Con 4, Township of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10210000	Lot 4, Con 4, Township of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 24 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	Impact to farm viability.
10499000	Part Lot 6 and 7, Con 4, Township of Georgina	Low Value Beef Operation	Displacement of approx. 4 ha (less than 25% of total) of cultivated farmland. Encroachment on low value farm buildings.	Compensation for the displaced property and for the encroachment on the farm building.	Loss of an agricultural operation (capital investment).
10535000	Lot 7, Con 4, Township of Georgina	High Value Operation (Abandoned)	Displacement and landlocking of approx. 1 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
10602600	Lot 9 and 10, Con 4, Township of Georgina	Cultivated Farmland (Sod Farm)	Displacement of approx. 10 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
1070860	Lot 11, Con 4, Township of Georgina	Cultivated Farmland (Sod Farm)	Displacement of approx. 7 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹	Mitigation	Net Impacts
10587300	Lot 10, Con 4, Township of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
10708400	Lot 11, Con 4, Township of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
10756000	Lot 11, Con 4, Township of Georgina	Medium Value Beef Farm	Displacement and landlocking of approx. 4 ha (25% to 50%) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	Impact to farm viability.
10760400	Lot 12, Con 4, Town of Georgina	Medium Value Beef	Displacement and landlocking of approx. 17 ha (greater than 50%) of cultivated farmland.	Compensation for the entire farm property at fair market value.	Loss of an agricultural operation.
10770500	Lot 14, Con 4, Town of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 12 ha (greater than 50%) of cultivated farmland.	Compensation for entire property.	Loss of an agricultural operation.
10810000	Lot 14, Con 5, Town of Georgina	Cultivated Farmland	Displacement of approx. 5 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
10807500	Lot 13, Con 5, Town of Georgina	Cultivated Farmland	Displacement of approx. 5 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
10872600	Lot 13 and 14, Con 5, Township of Georgina	Cultivated Farmland	Displacement of approx. 10 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
11437500	Lot 14, Con 6, Town of Georgina	Medium Value Beef Farm	Displacement of approx. 8 ha (less than 25% of total) of cultivated farmland. Encroachment on medium value farm buildings (within 100m).	Compensation for the displaced farmland and the encroachment on the farm buildings.	Loss of an agricultural operation (capital investment).
11770800	Lot 15, Con 6, Town of Georgina	Medium Value Operation (Orchard)	Displacement of approx. 5 ha (less than 25% of total) of cultivated farmland/cedar bush. Displacement of spring-fed pond.	Compensation for the displaced property and the displacement of a spring-fed pond.	Impact to farm viability.
11849500	Lot 17, Con 6, Township of Georgina	Medium Value Cash Crop Operation	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
11798000	Lot 16, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 5 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
11878800	Lot 19, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 1 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
11977500	Lot 18, Con 6, Town of Georgina	High Value Operation	Displacement and landlocking of approx. 14 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked property at fair market value.	Impact to farm viability.
11930000	Lot 19, Con 7, Town of Georgina	Uncultivated Farmland	Displacement of approx. 7 ha (25% to 50% of total) of uncultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
11935000	Lot 19, Con 7, Town of Georgina	Uncultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of uncultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹	Mitigation	Net Impacts
11945000	Lot 19, Con 7, Town of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
11946200	Lot 18, Con 7, Town of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
11947600	Lot 20, Con 7, Town of Georgina	Cultivated Farmland	Displacement of approx. 10 ha and landlocking of approx. 8 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked property at fair market value.	Impact to farm viability.
3060200	Lots 1 and 2 (South), Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
3070906	Lots 1 and 2 (North), Con 6, Town of Georgina	Uncultivated Farmland	Displacement of approx. 4 ha (less than 25% of total) of uncultivated farmland (pasture).	Compensation for the displaced farmland at fair market value.	No net impact.
3072500	Lot 2, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 8 ha (25% to 50% of total) of cultivated farmland. Continued access to southern fields requires re-routing via Highway 48.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
3086000	Lot 3 and 4, Con 6, Town of Georgina	High Value Operation (Beef or Dairy)	Encroachment on high value farm building (within 150 m). Displacement of approximately 8 ha (less than 25% of total) of cultivated farmland. Continued access to southern fields requires re-routing via Highway 48.	Compensation for the displaced property, encroachment on the farm building and for the necessary re-routing to gain access to southern fields.	Loss of an agricultural operation (capital investment).
3100000	Lot 4, Con 6, Town of Georgina	High Value Operation (Beef or Dairy)	Displacement of approx. 5 ha (less than 25% of total) and with re-routing to access 20 ha south of the proposed alignment.	Compensation for the displaced farmland and for the necessary re-routing to access the southern fields.	Impact to farm viability.
4081000	Lot 8, Con 6, Town of Georgina	Low Value Beef Operation (Abandoned)	Displacement of approx. 6 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
4070080	Lot 8 and 9, Con 6, Town of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 12 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
4080500	Lot 9, Con 6, Town of Georgina	Low Value Beef Operation	Displacement and landlocking of approx. 6 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	No net impact.
4090000	Lot 10, Con 6, Town of Georgina	Low Value Beef Operation	Displacement of approx. 6 ha (less than 25% of total) of cultivated farmland. Displacement of a spring-fed pond used to water livestock.	Compensation for the displacement of farmland at fair market value and for the displaced spring fed pond.	No net impact.
4100000	Lot 11, Con 6, Town of Georgina	Uncultivated Farmland (Pasture)	Displacement and landlocking of approx. 8 ha (less than 25% of total) of uncultivated farmland.	Compensation for the displaced and landlocked farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹³	Mitigation	Net Impacts
4050800	Lot 12, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 2 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
4053000	Lot 12, Con 6, Town of Georgina	Low Value Beef Operation (Abandoned)	Displacement of approx. 4 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland.	No net impact.
4040200	Lot 13, Con 6, Town of Georgina	Low Value Beef Operation	Displacement of approx. 6 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	Impact to farm viability.
4041000	Lot 14, Con 6, Town of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 12 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	Impact to farm viability.
4120500	Lot 14, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland. Continued access to southern fields requires re-routing on local roads.	Compensation for the displaced property and for the necessary re-routing required to gain continued access to southern fields.	Impact to farm viability.
4125000	Lot 15, Con 6, Town of Georgina	Sod Operation	Displacement of approx. 3 ha (less than 25% of total) of cultivated farmland. Continued access to southern fields requires re-routing on local roads.	Compensation for the displaced property and for the necessary re-routing required to gain continued access to southern fields.	Impact to farm viability.
6020500	Lot 15 and 16, Con 6, Town of Georgina	Specialty Crop Operation	Displacement of approx. 3 ha (less than 25% of total) of specialty crop. Continued access to southern fields requires re-routing on local roads.	Compensation for the displaced property and for the necessary re-routing required to gain continued access to southern fields.	Impact to farm viability.
6030000	Lot 16, Con 6, Town of Georgina	Specialty Crop Operation	Displacement of approx. 3 ha (less than 25% of total) of specialty crop. Continued access to southern fields requires re-routing on local roads.	Compensation for the displaced property and for the necessary re-routing required to gain continued access to southern fields.	Impact to farm viability.
6040000	Lot 17, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approximately 3 ha (less than 25% of total) of cultivated farmland. Continued access to southern fields requires re-routing on local roads. Potential impact to tile drainage system.	Compensation for the displaced property and for the necessary re-routing required to gain continued access to southern fields.	Impact to farm viability.
6050000	Lot 17, Con 6, Town of Georgina	Cultivated Farmland	Displacement and landlocking of approx. 10 ha (25% to 50% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland.	Impact to farm viability.
6064000	Lot 19, Con 6, Town of Georgina	Low Value Horse Farm	Displacement of approx. 1 ha (less than 25% of total) of uncultivated farmland and encroachment of farm buildings.	Compensation for the displaced farmland at fair market value.	Loss of an agricultural operation (capital investment).
6068000	Part Lot 20, Con 6, Town of Georgina	Low Value Greenhouse Operation	Displacement and landlocking of approx. 7 ha (greater than 50% of total) of cultivated farmland. Encroachment on farm buildings.	Compensation for the entire farm property.	Loss of an agricultural operation (separation and capital investment).
6080500	Part Lots 21 and 22, Con 6, Town of Georgina	Uncultivated Farmland	Displacement of approximately 4 ha (less than 25% of total) of uncultivated (pasture) farmland.	Compensation for the displaced farmland at fair market value.	No net impact.

HIGHWAY 404 EXTENSION - AGRICULTURAL IMPACTS - PREFERRED ROUTE

Roll No.	Location	Feature	Potential Impact ¹⁾	Mitigation	Net Impacts
6095000	Lot 24, Con 6, Town of Georgina	Cultivated Farmland	Displacement and landlocking of approximately 15 ha (greater than 50% of total) of cultivated farmland.	Compensation for the entire farm property at fair market value.	Loss of an agricultural operation.
6100000	Part Lots 24 and 25, Con 6, Town of Georgina	Low Value Greenhouse Operation (Abandoned)	Displacement of approximately 5 ha (less than 25% of the total) of cultivated land and displacement of greenhouses.	Compensation for the displaced property and for the displacement of the greenhouses.	Loss of an agricultural operation (capital investment).
61205000	Lot 25, Con 6, Town of Georgina	Cultivated Farmland	Displacement of approximately 8 ha (greater than 50 %) of cultivated farmland.	Compensation for the entire farm property at fair market value.	Loss of an agricultural operation.
3235000	Lot 1, Con 13, Township of Brock	Uncultivated Farmland (Pasture)	Displacement of approximately 20 ha (greater than 50% of total) of uncultivated (pasture) farmland	Compensation for the entire farm property at fair market value.	Loss of an agricultural operation.
4036000	Part Lots 17, 18, 19, Con 1, Township of Brock	High Value Operation (Storage)	Displacement of approx. 2 ha (less than 25% of total) of uncultivated farmland. Encroachment on farm buildings.	Compensation for the displaced farmland at fair market value.	Displacement of an agricultural operation (capital investment).
3377000	Lot 4, Con 14, Township of Brock	Low Value Swine Operation	Disruption to access from farm at Lot 16, Con 1 (listed below).	Compensation for disruption to access.	Impacts to farm viability.
40030000	Lot 16, Con 1, Township of Brock	Low Value Beef	Displacement of approximately 4 ha (less than 25% of total) of farmland and spring-fed pond.	Compensation for the displaced property, and for the displacement of spring-fed pond.	Impacts to farm viability.
4028000	Lot 15, Con 1, Township of Brock	Low Value Vegetable Farm	Displacement of approximately 2 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced farmland at fair market value.	No net impact.
4017000, 4014000	Part Lot 13 and 14, Con 1 Township of Brock	High Value Dairy Operation	Displacement of approximately 4 ha (less than 25% of the total) of cultivated land.	Compensation for the displaced farmland at fair market value.	No net impact.
4004000	Lot 11, Con 1, Township of Brock	Medium Value Beef Operation	Displacement and landlocking of approximately 4 ha of farmland (less than 25% of total); and b) disruption to continued access to rented farmland (approximately 20 ha).	Compensation for the displaced property, and for access constraints to leased land.	Impact to farm viability.
4003000	Lot 11, Con 1, Township of Brock	Cultivated Farmland	Partial diagonal severance to southern farm fields displacing and landlocking approx. 20 ha (greater than 50% of the total) of cultivated farmland.	Compensation for the entire farm property at fair market value.	Loss of agricultural operation (20 ha).
4001000	Lot 11, Con 1, Township of Brock	Medium Value Dairy Operation	Displacement and landlocking of approx. 8 ha (less than 25% of total) of cultivated farmland.	Compensation for the displaced and landlocked farmland at fair market value.	No net impact.

Notes:

- 1) A farm operation was considered to be a complete displacement a) greater than 50% of the working fields were displaced and/or landlocked or; b) the farm complex was within 100 m of the right-of-way.
- 2) At a minimum, a farm operation had to have at least 10 ha actively utilized for agricultural production.
- 3) The bracketed "(Capital Investment)" identifies that the farm was displaced due to the proximity of the farm buildings to the proposed alignment (within 100m) and "(separation)" identifies a farm displaced due to a loss of greater than 50% of the working fields.

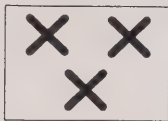
Appendix

Agriculture Resource Maps

The information contained on the following maps was collected from a windshield survey during the summer of 1994 and from the interpretation of 1:10,000 aerial photography (MNR, 1992)

Legend - Agricultural Impacts

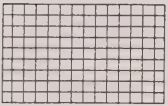
Crop Systems



Specialty Crops (i.e. orchards, field vegetables)



Cultivated (i.e. soybeans, wheat, corn)



Uncultivated (i.e. pasture for cattle)

Capital Investment



High Value



Medium Value



Low Value

Farm Type

A - Abandoned

B - Beef

C - Cash Crop

D - Dairy

G - Greenhouse

H - Horse

O - Organic

S - Swine

TOWN OF EAST GWILLIMBURY
TOWN OF NEWMARKET

STA 101+600

10+2800

CON
LOT 3
LOT 4

10+27200

TOWN OF EAST GWILLIMBURY
REGION OF YORK

10+22000

no disp
boundary
7250

1003000

LIMIT OF STUDY
DAVIS DRIVE
10+000 PROPOSED HWY

CON

DAVIS DRIVE
YORK REGIONAL ROAD 3

DESIGN SPEED = 120 km/h

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A=500

A=500

A=500

A=500

A=500

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DAVIS DRIVE

MATCH EXISTING

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1:10% X

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Ontario
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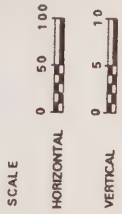
COLE
SHERMAN

HIGHWAY 404
EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



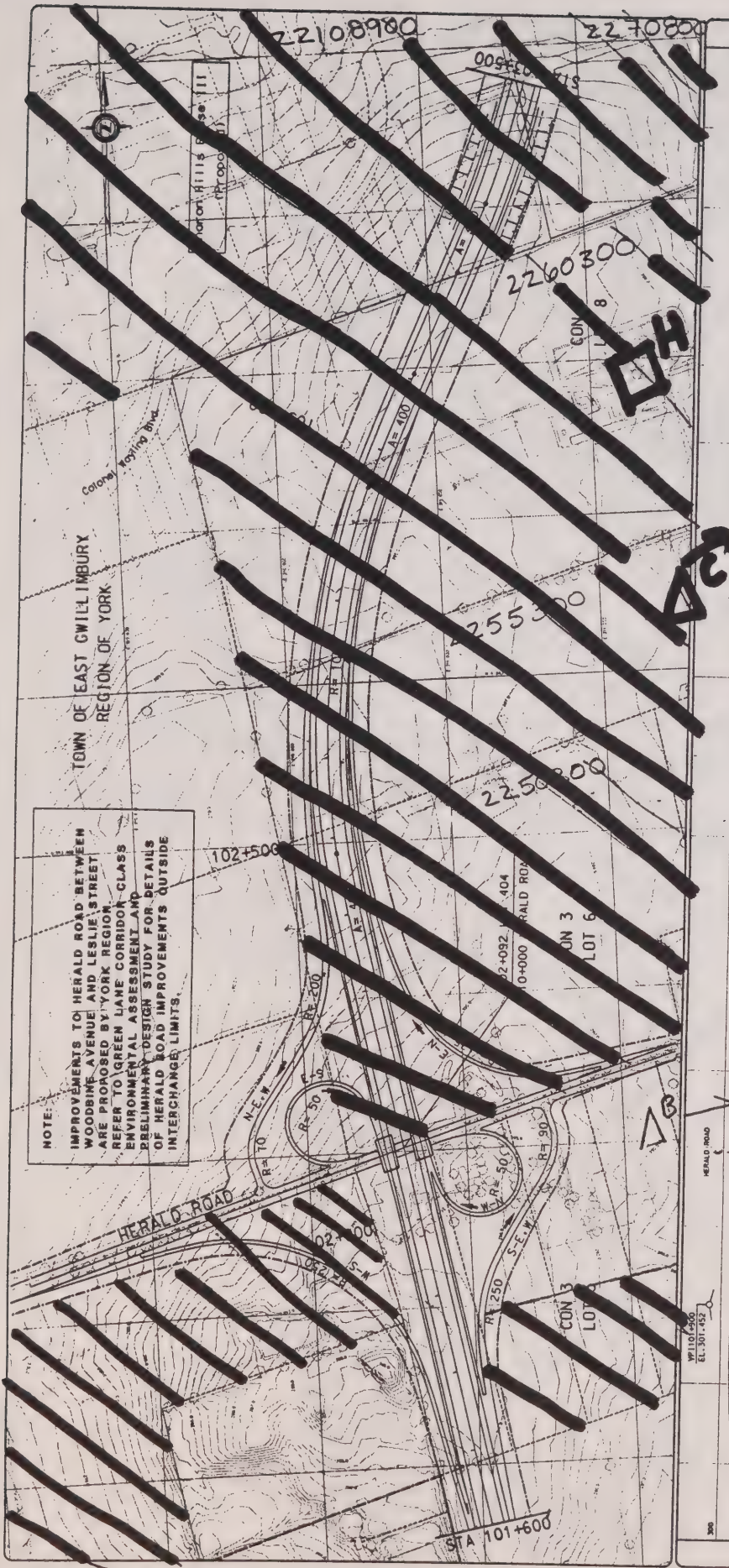
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Proposed R.O.W.



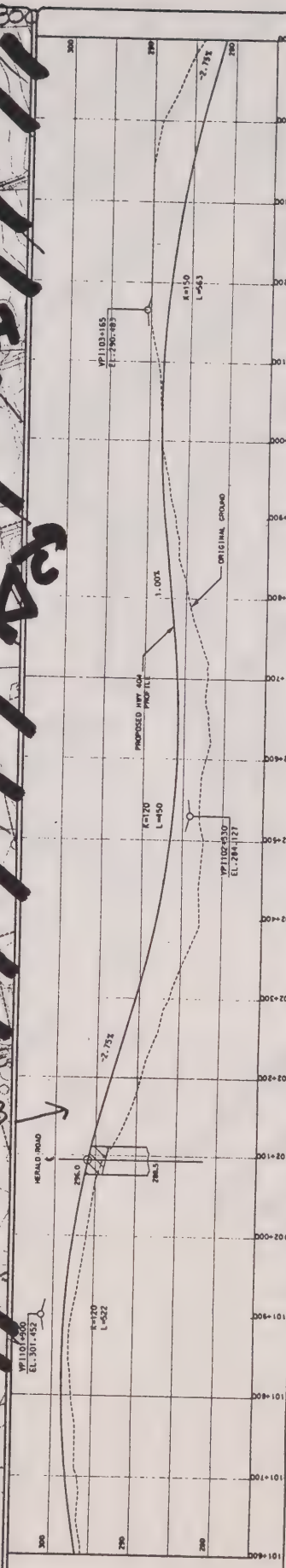
Sta 100+000 to Sta 101+600
Davis Drive Interchange

PLATE

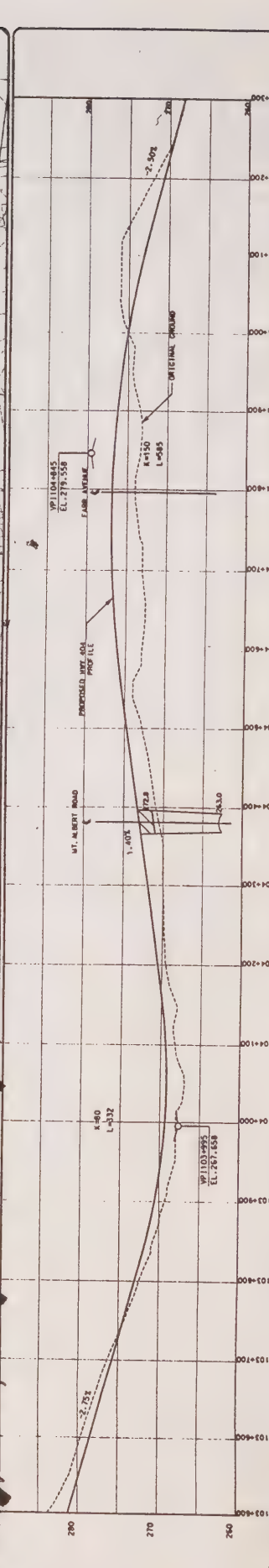
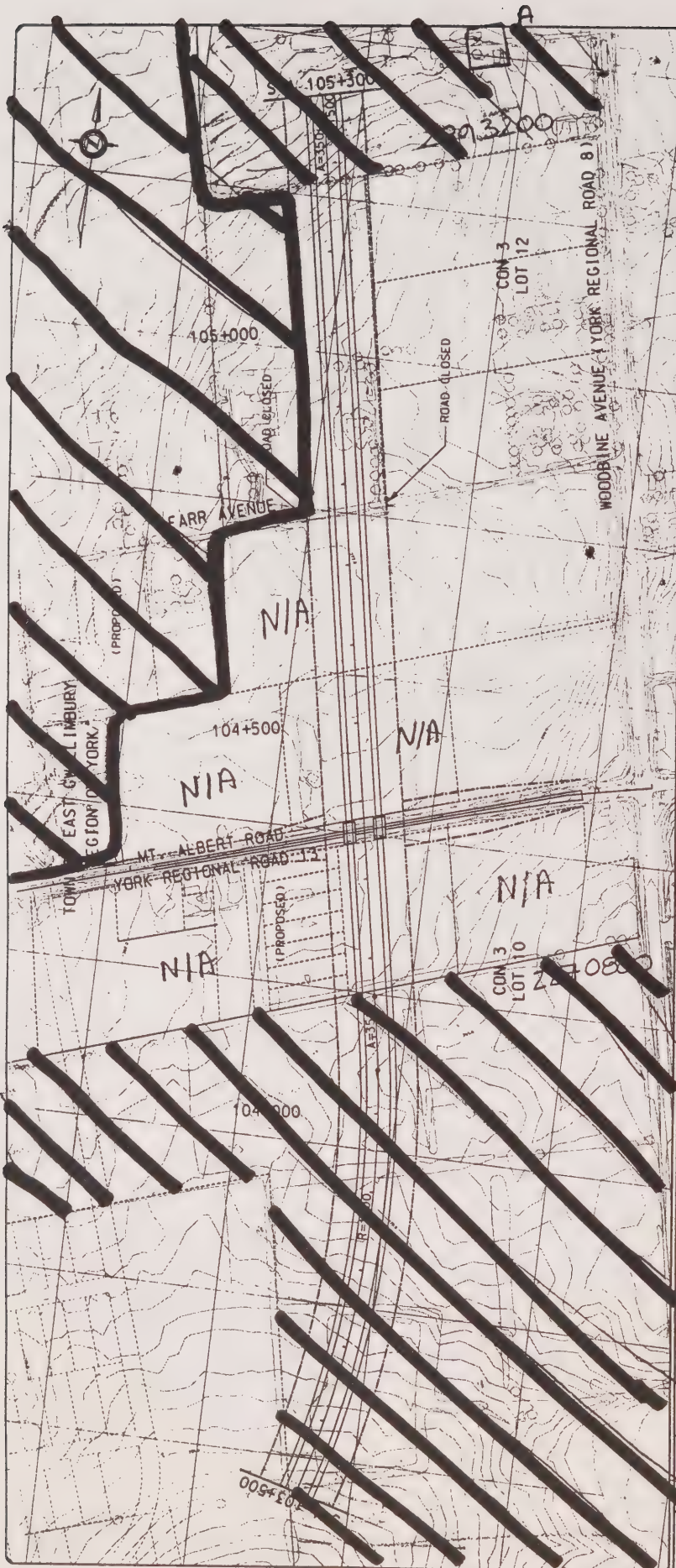
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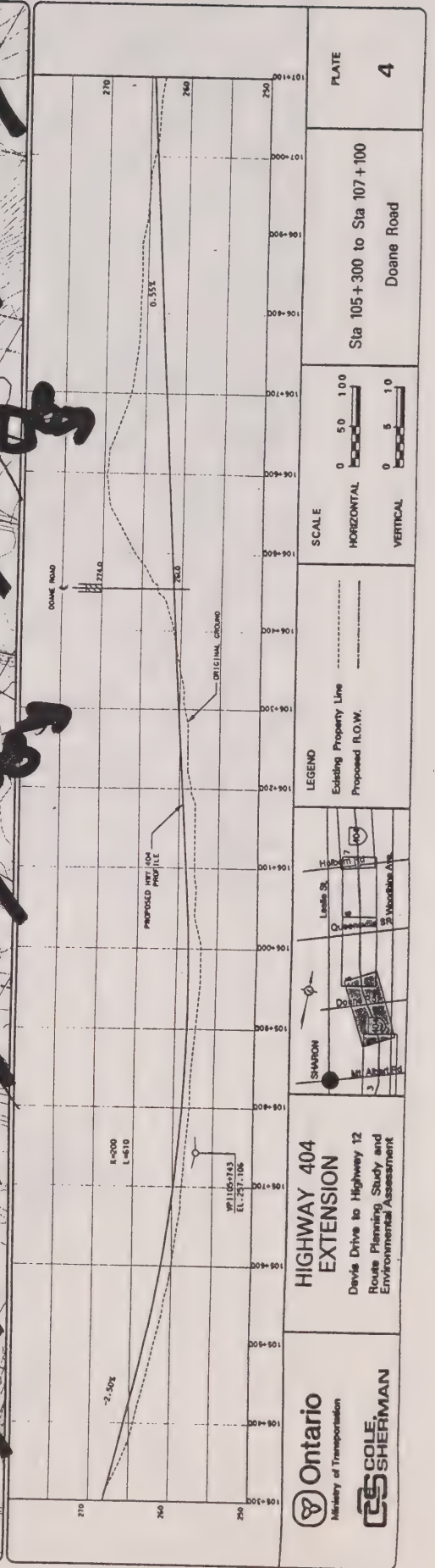
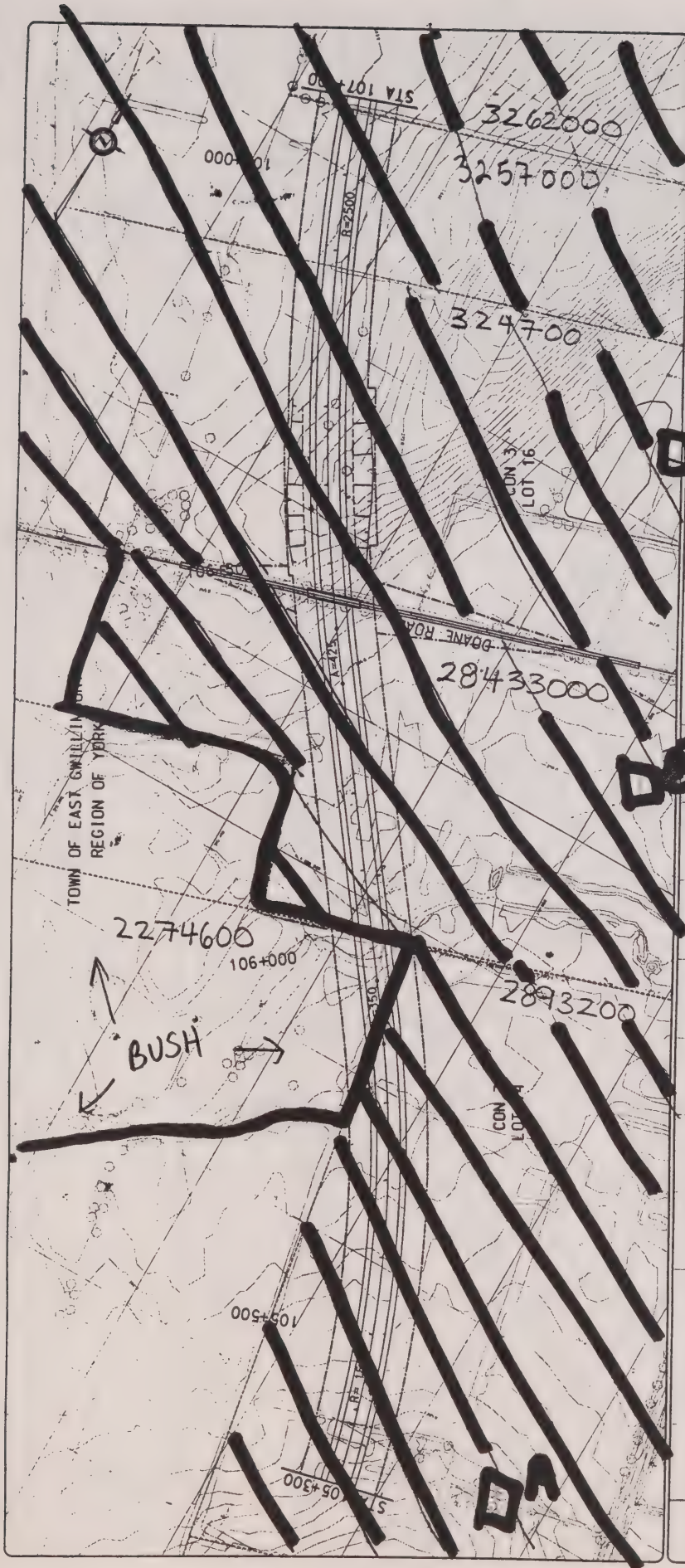
NOTE:
IMPROVEMENTS TO HERALD ROAD BETWEEN WOODBINE AVENUE AND LESLIE STREET ARE PROPOSED BY YORK REGION. CLASS REFER TO GREEN LANE CORRIDOR CLASS ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN STUDY FOR DETAILS OF HERALD ROAD IMPROVEMENTS OUTSIDE INTERCHANGE LIMITS.



 COLE, SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	PLATE Sta 101+600 to Sta 103+500 Herald Road Interchange 2
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 COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	Sta 103+500 to Sta 105+300 Mt. Albert Road	PLATE 3
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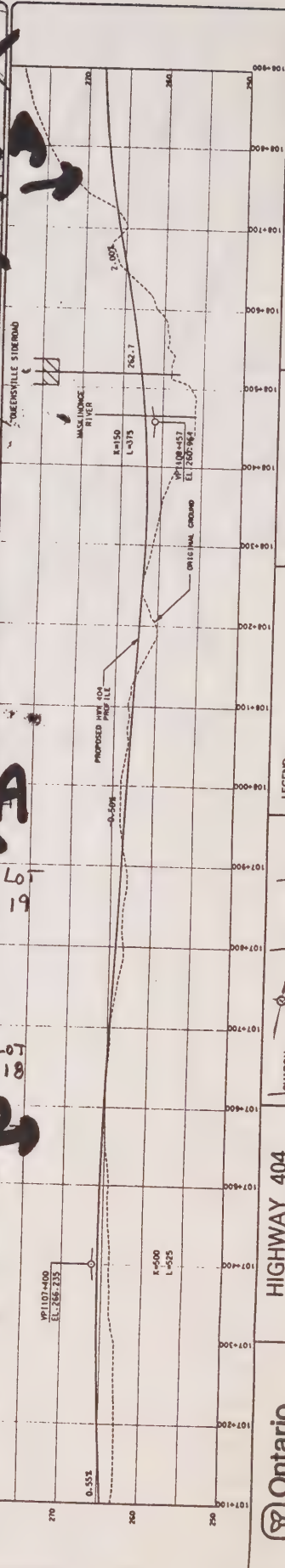


**HIGHWAY 404
EXTENSION**

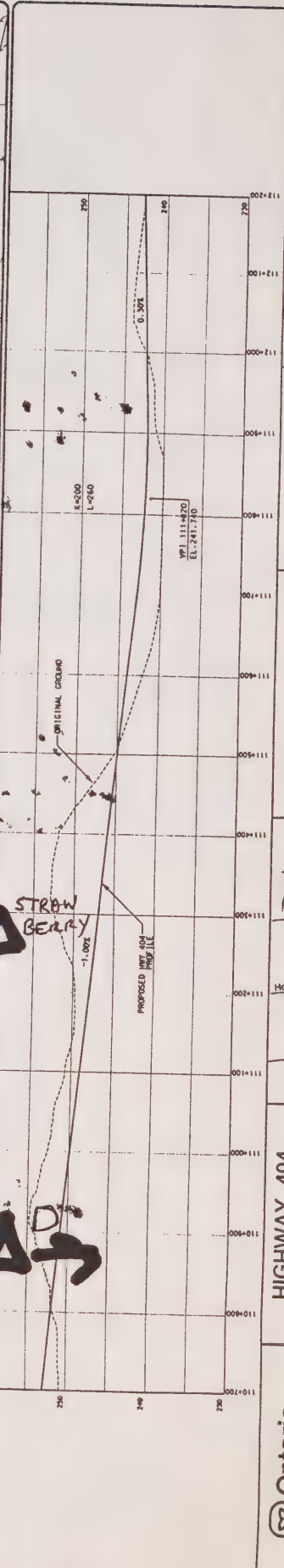
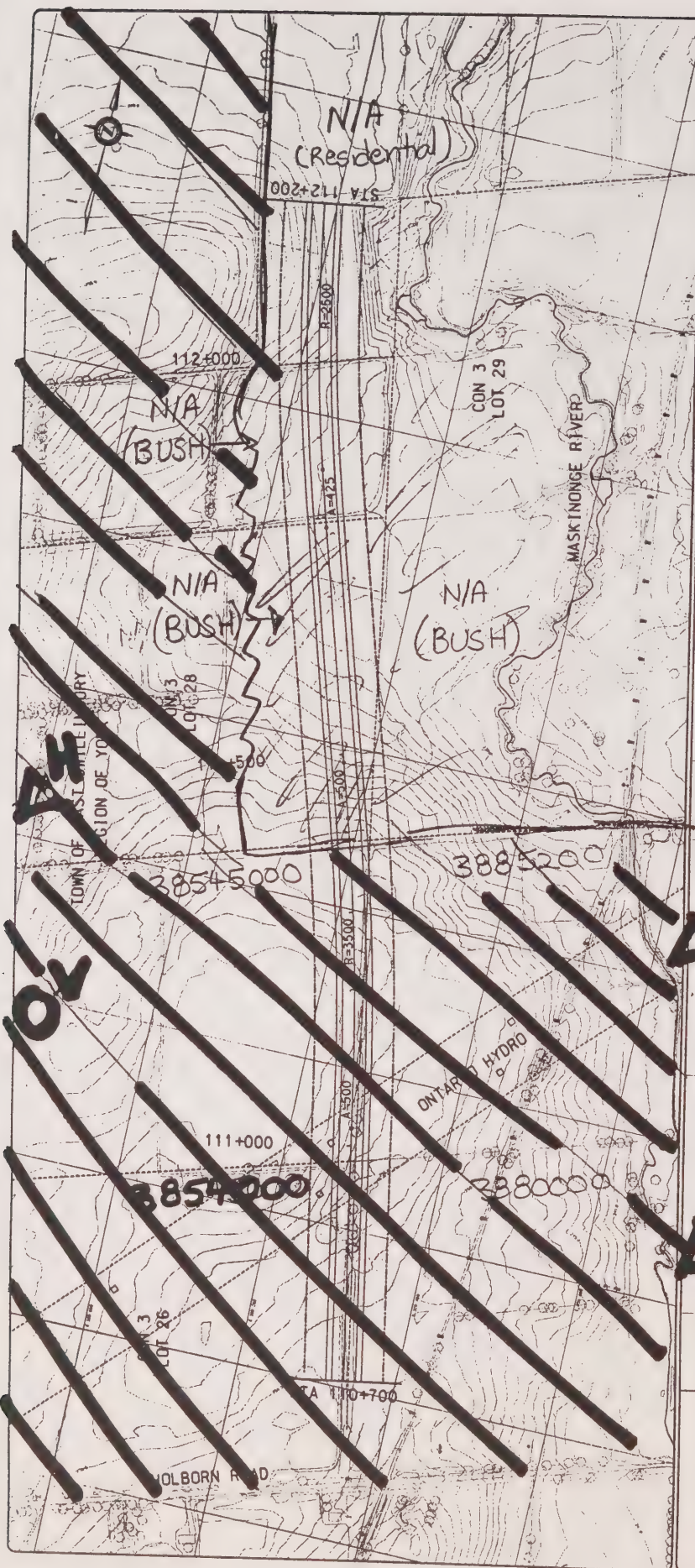
Devie Drive to Highway 12
Route Planning Study and
Environmental Assessment

Ontario
Ministry of Transportation

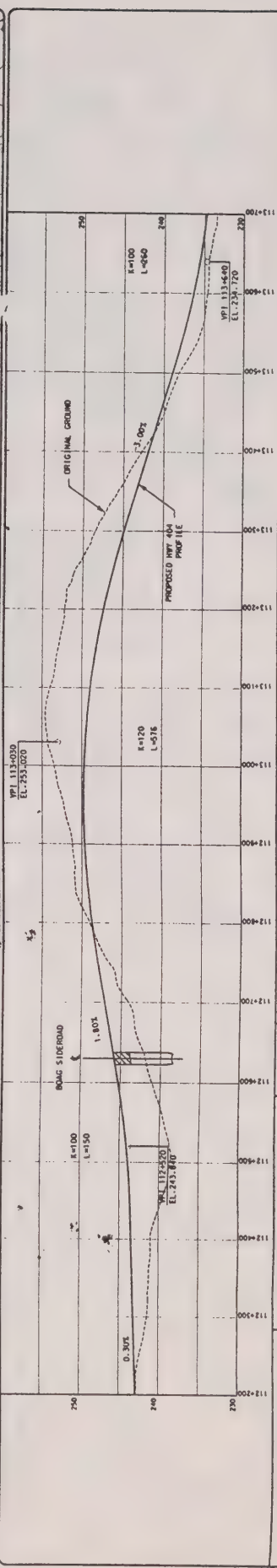
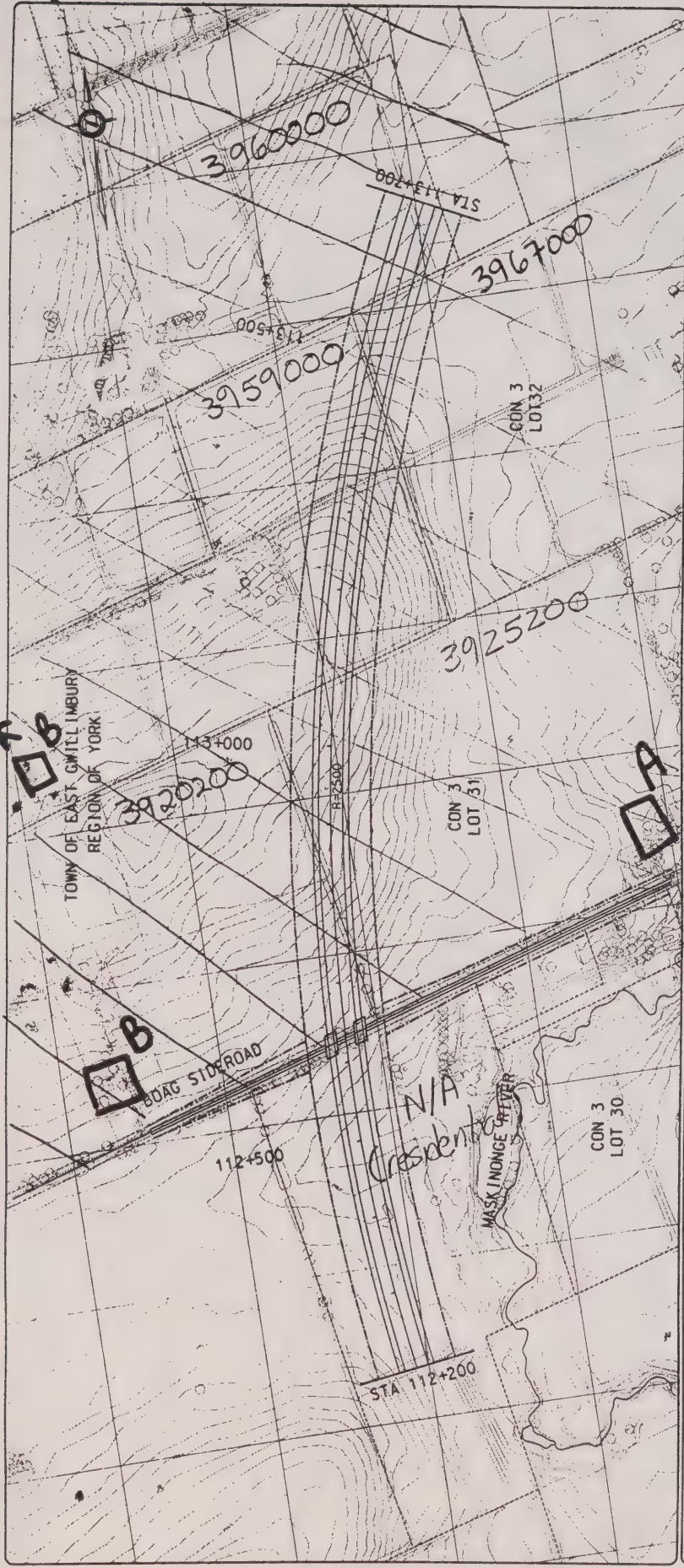
**COLE
SHERMAN**



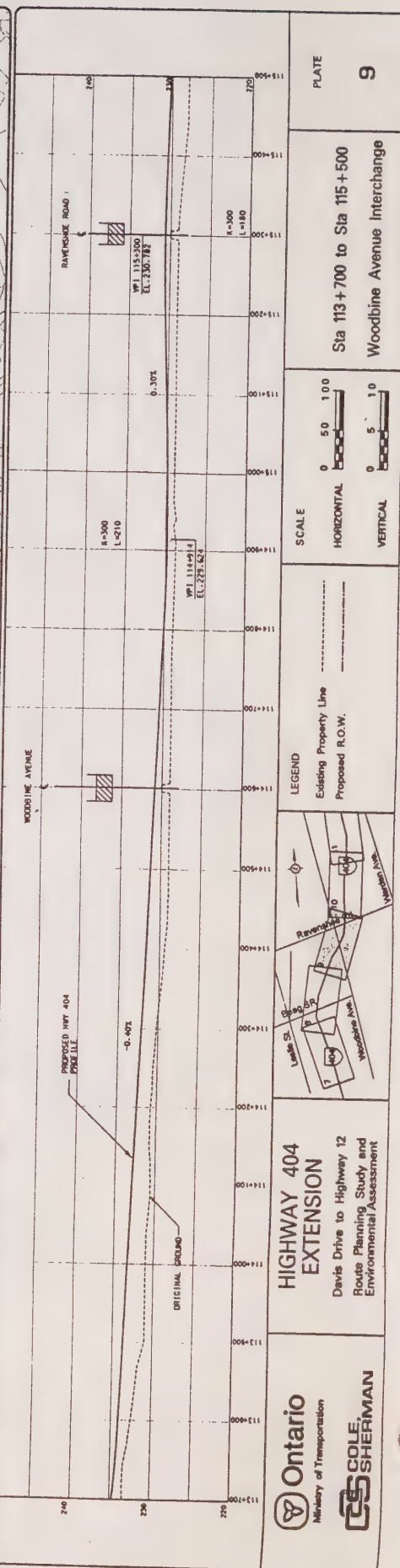
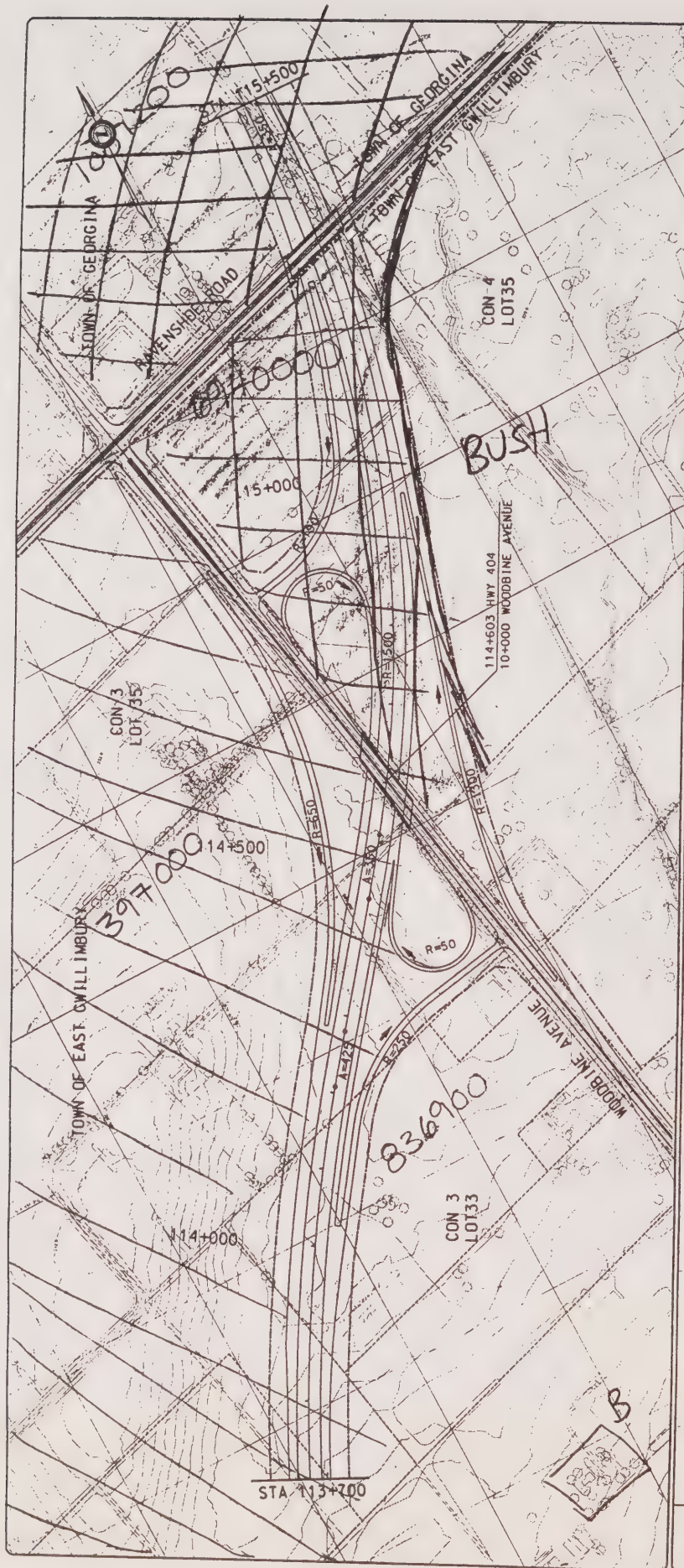
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				Sta 107+100 to Sta 108+900 Queensville Interchange



	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	STA 110+700 to Sta 112+200	PLATE 7



 COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	Sta 112+200 to Sta 113+700 Boag Sideroad	PLATE 8
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COLE SHERMAN

HIGHWAY 404
EXTENSION
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment

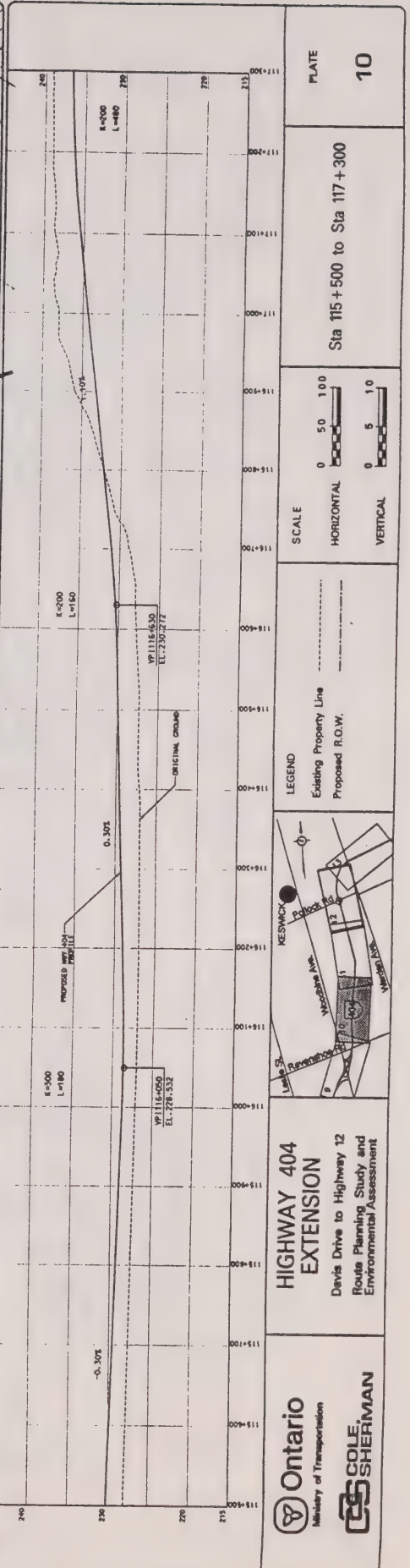
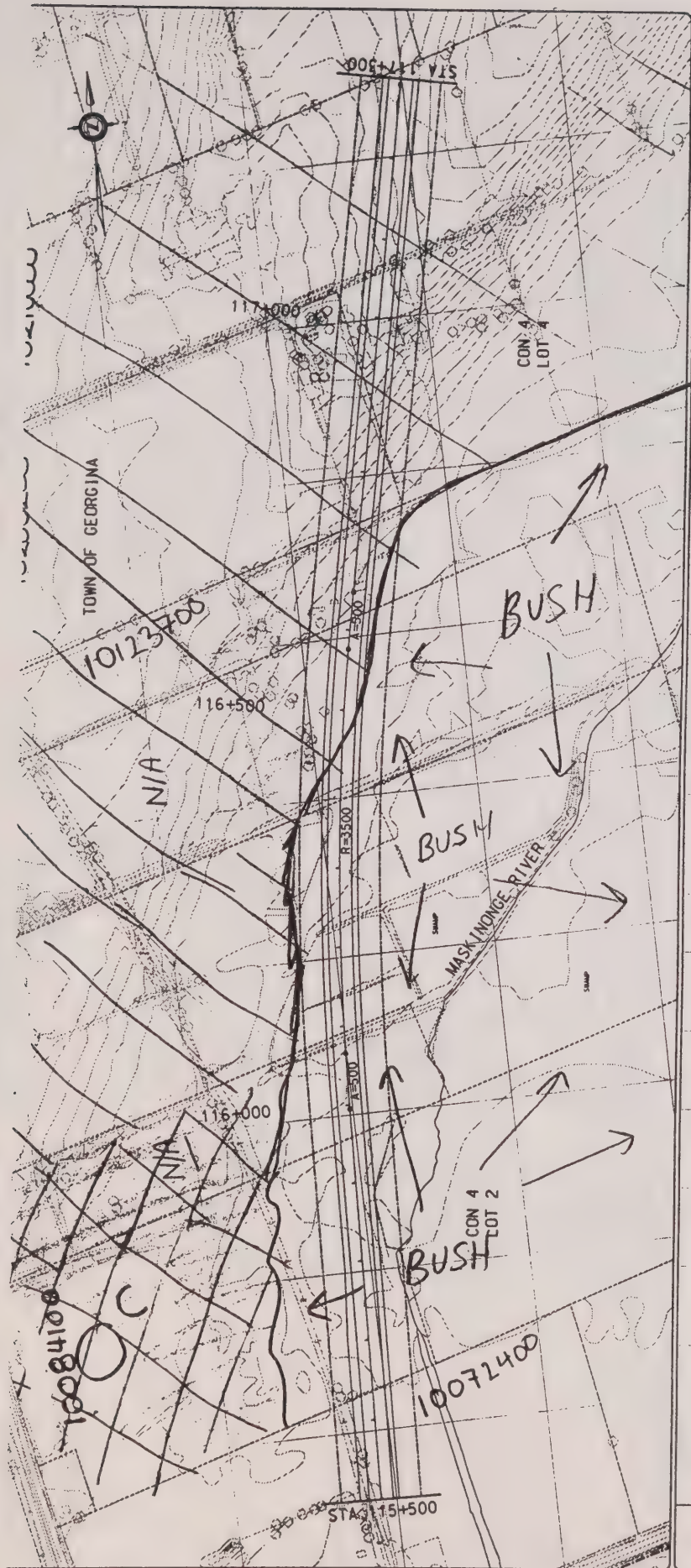
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Proposed R.O.W.

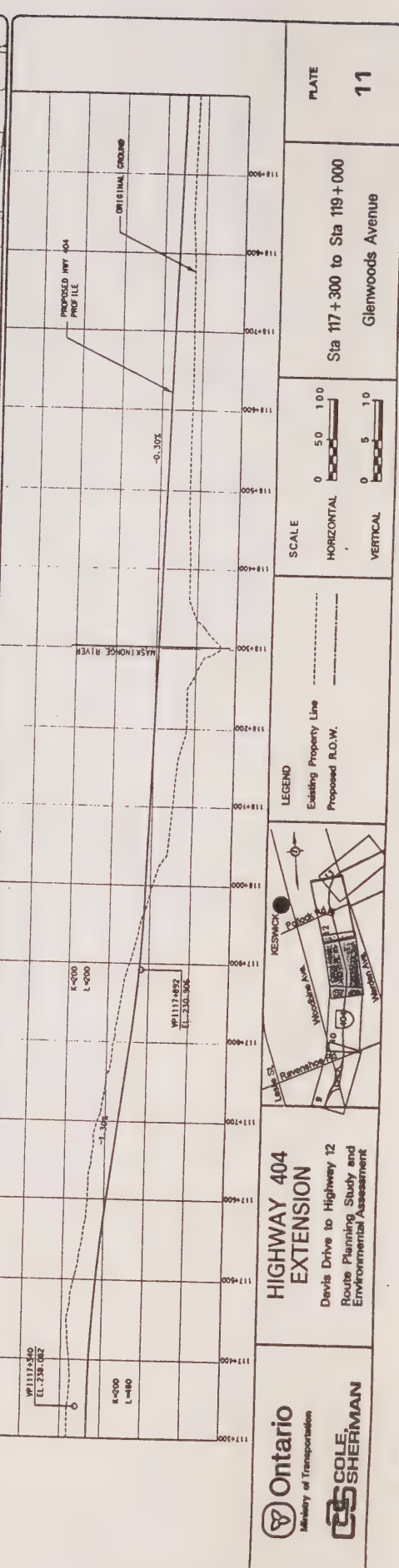
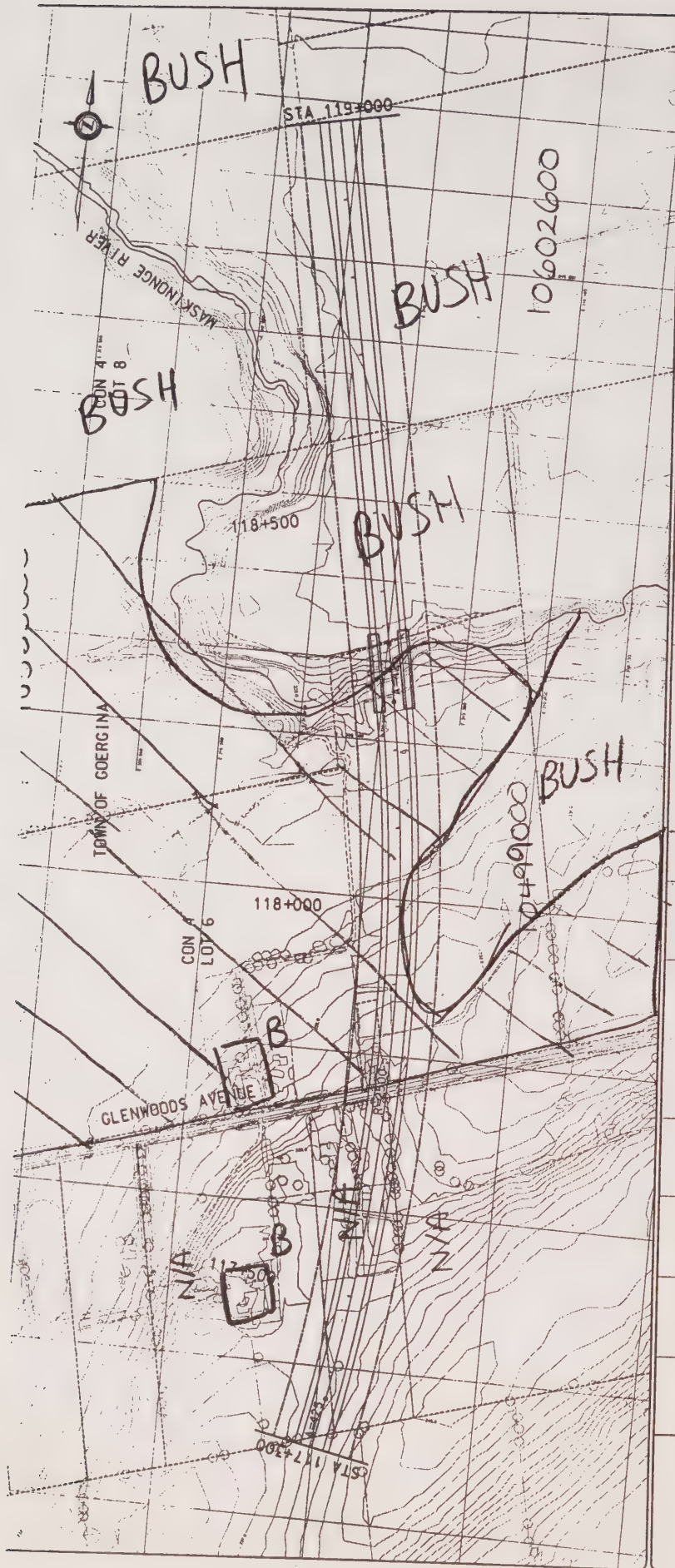
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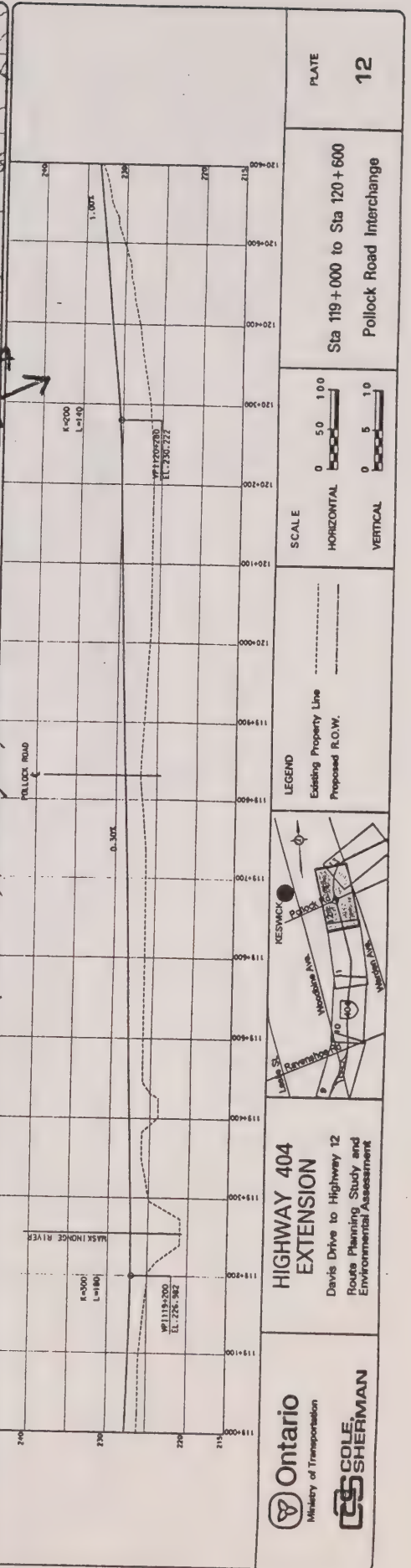
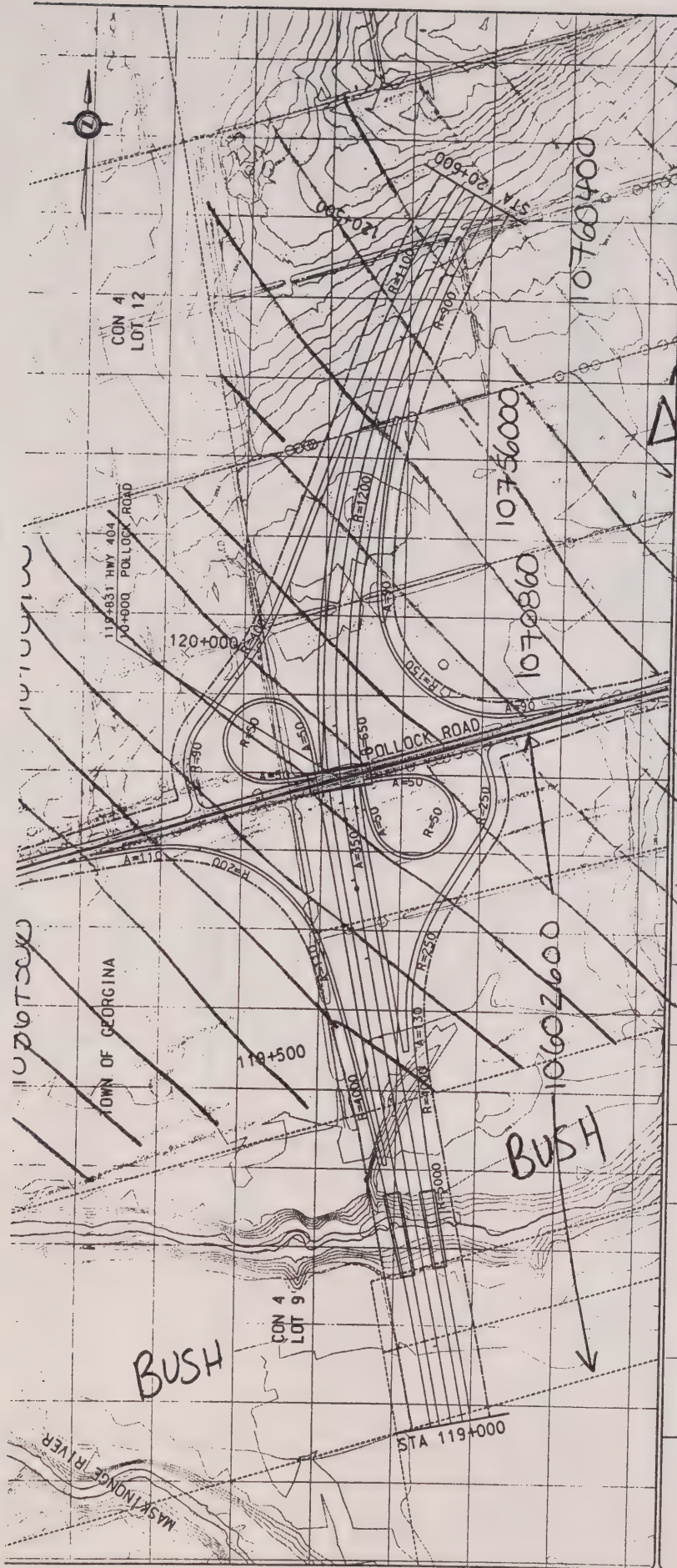
Sta 113+700 to Sta 115+500
Woodbine Avenue Interchange

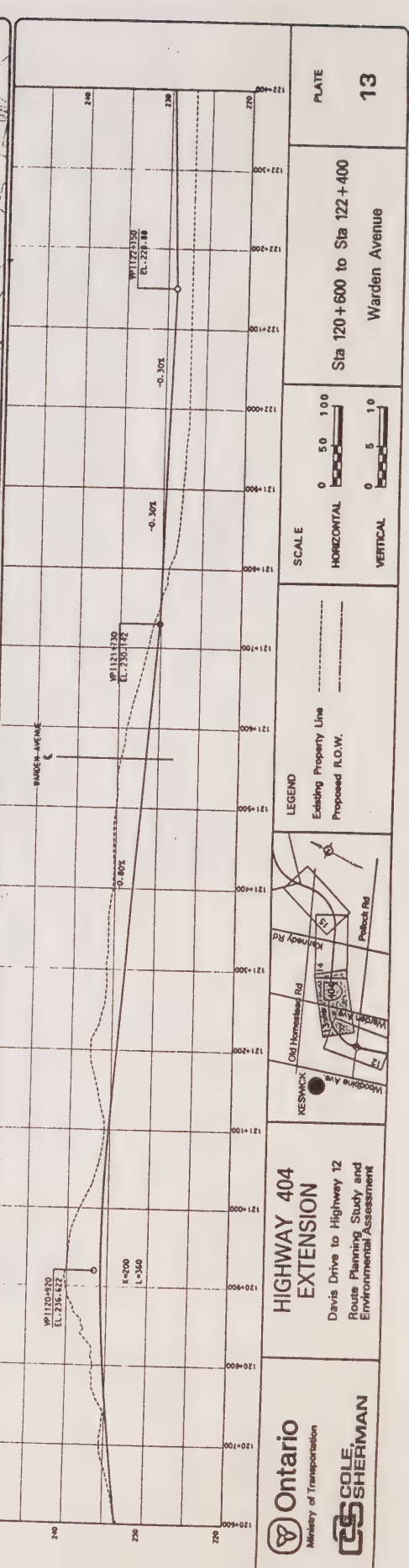
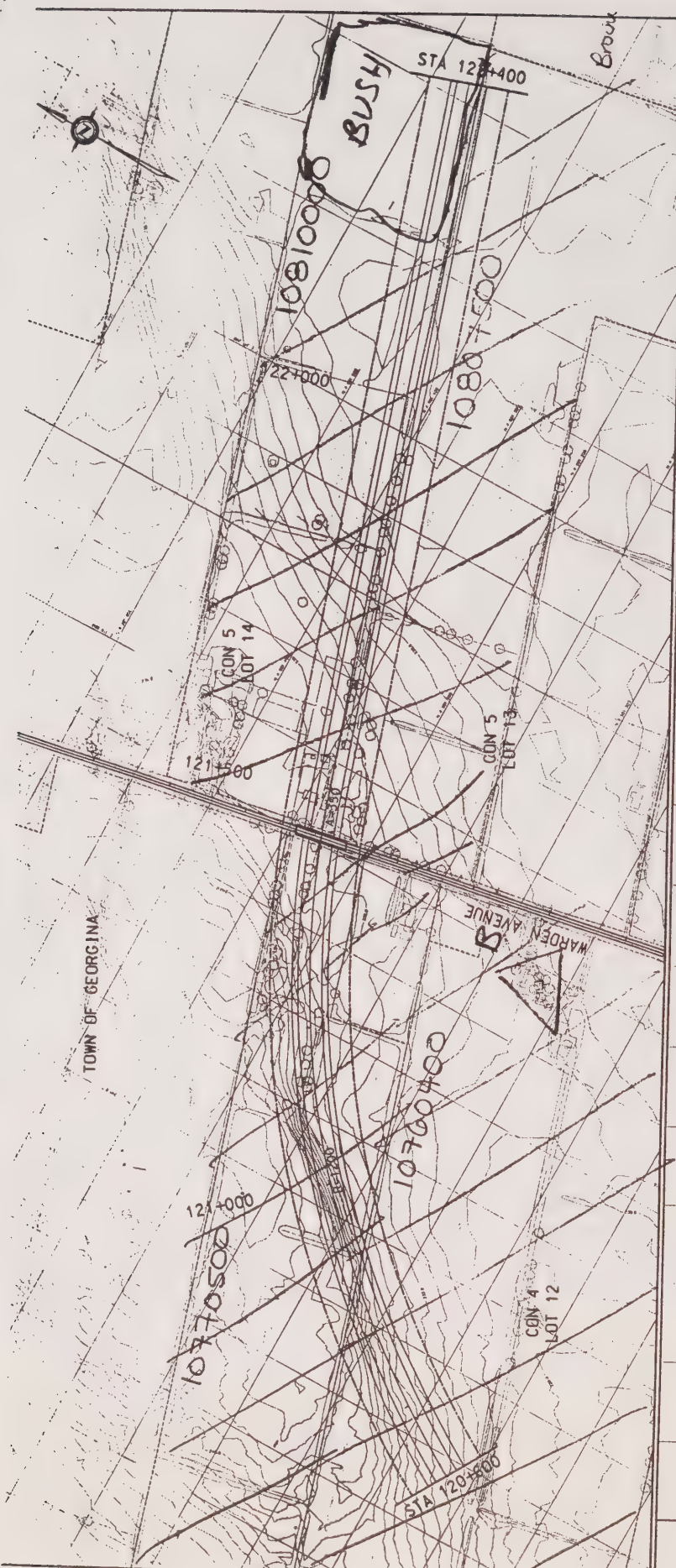
PLATE

9









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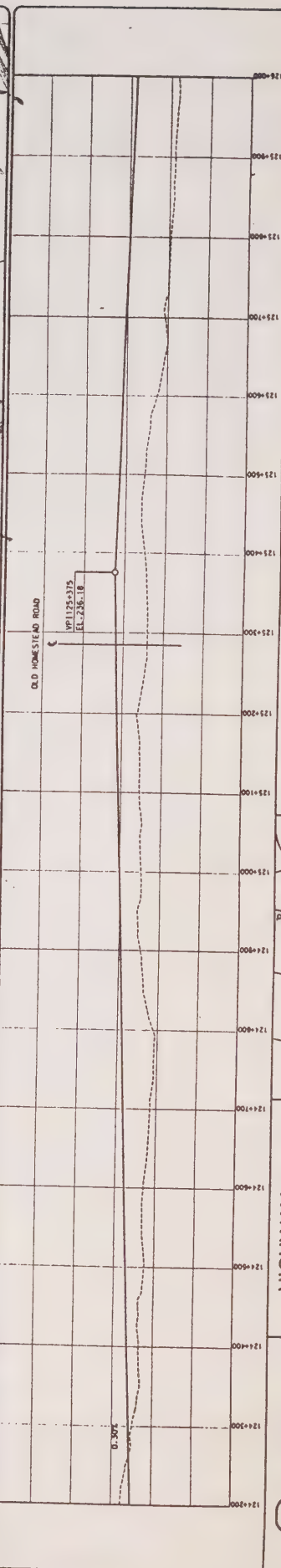
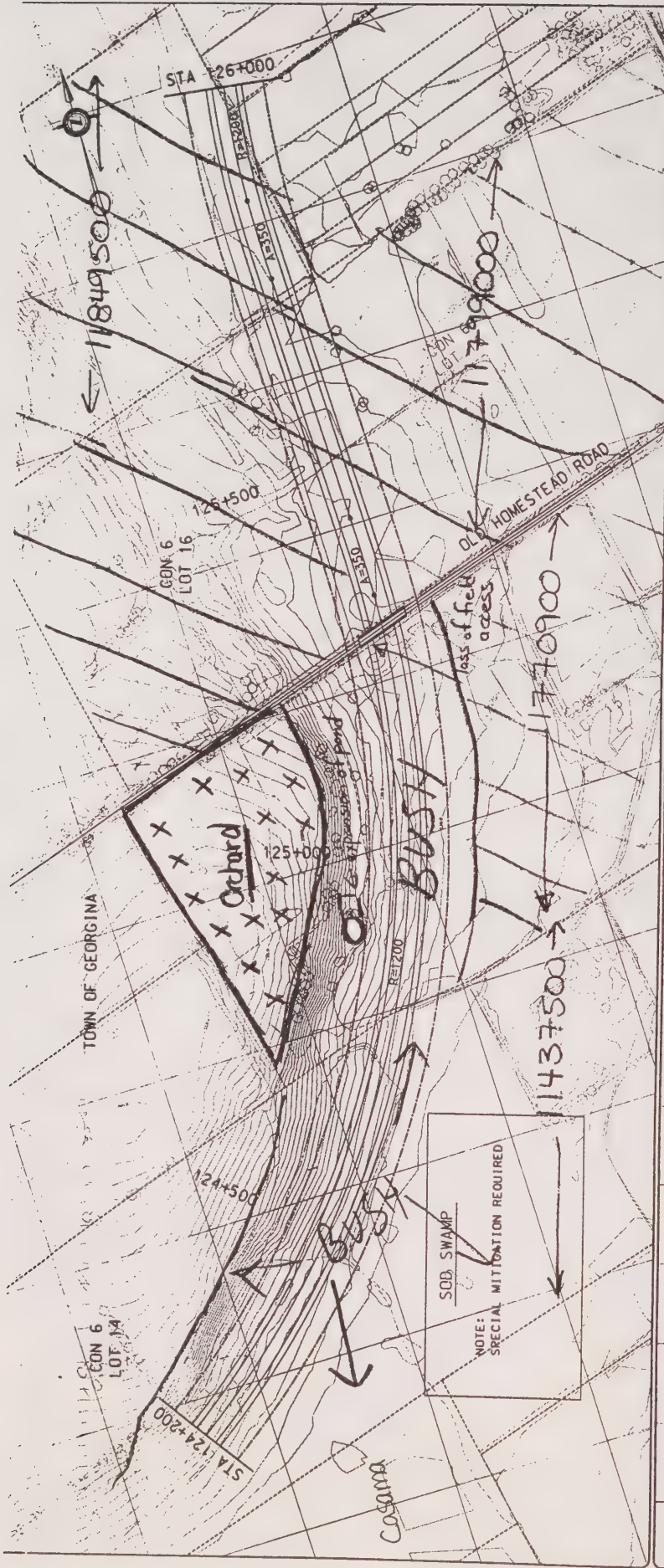
**HIGHWAY 404
EXTENSION**
Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



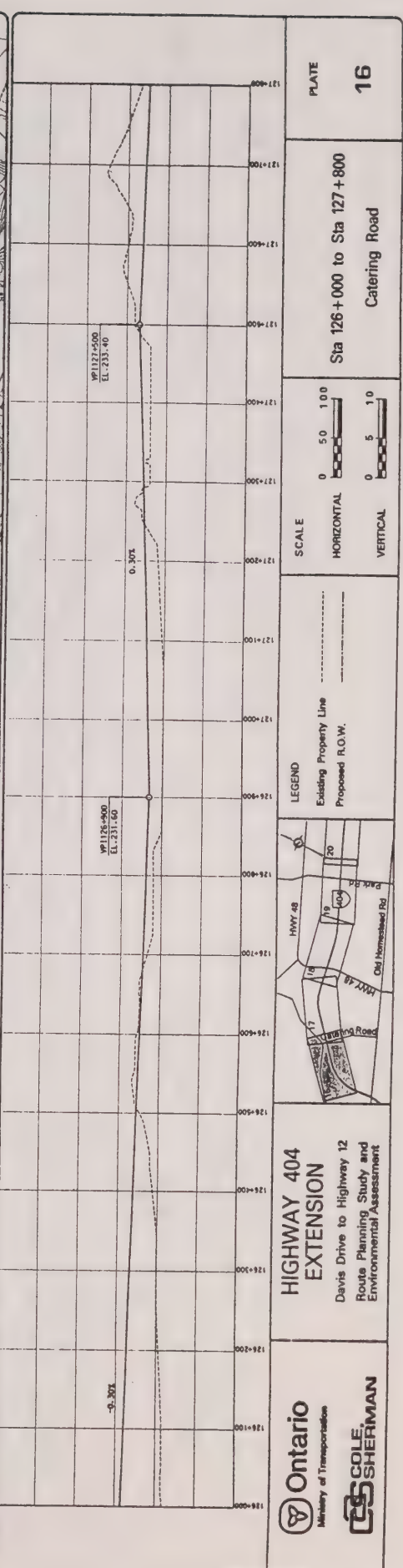
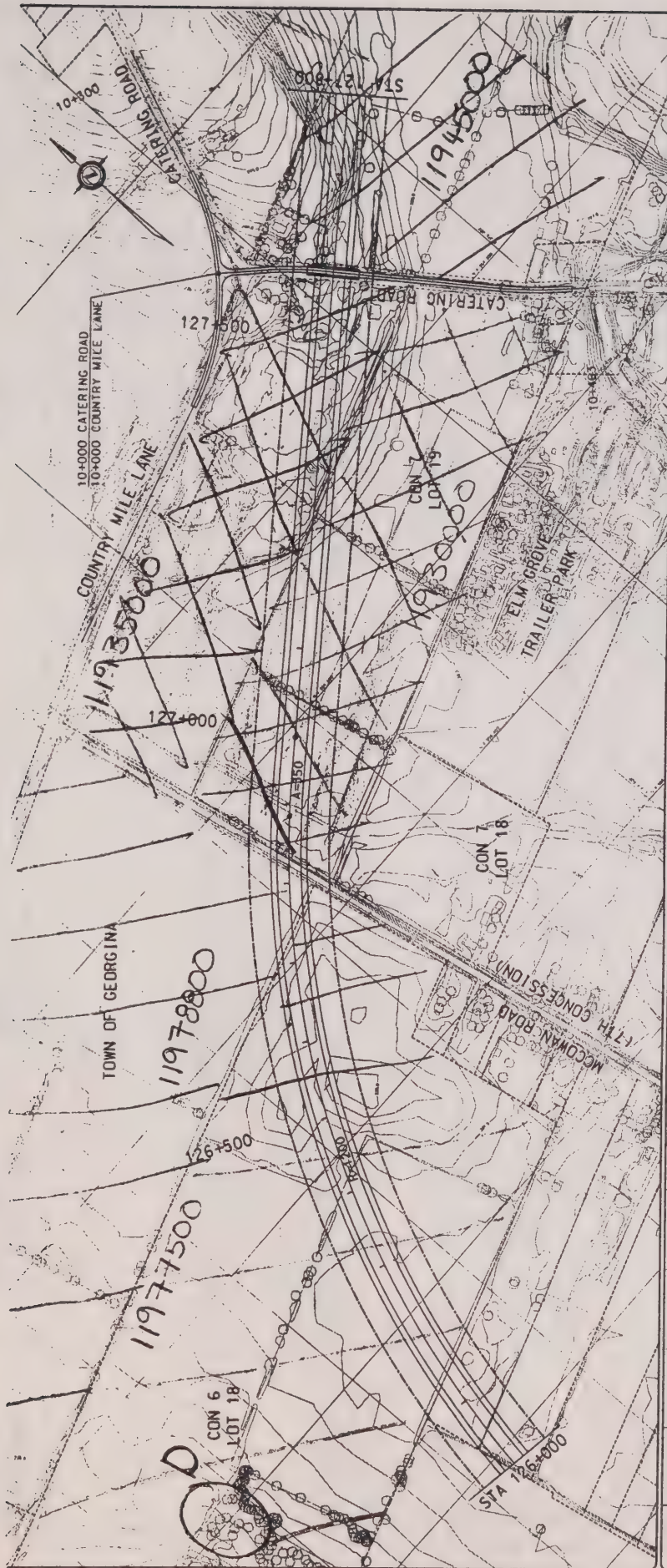
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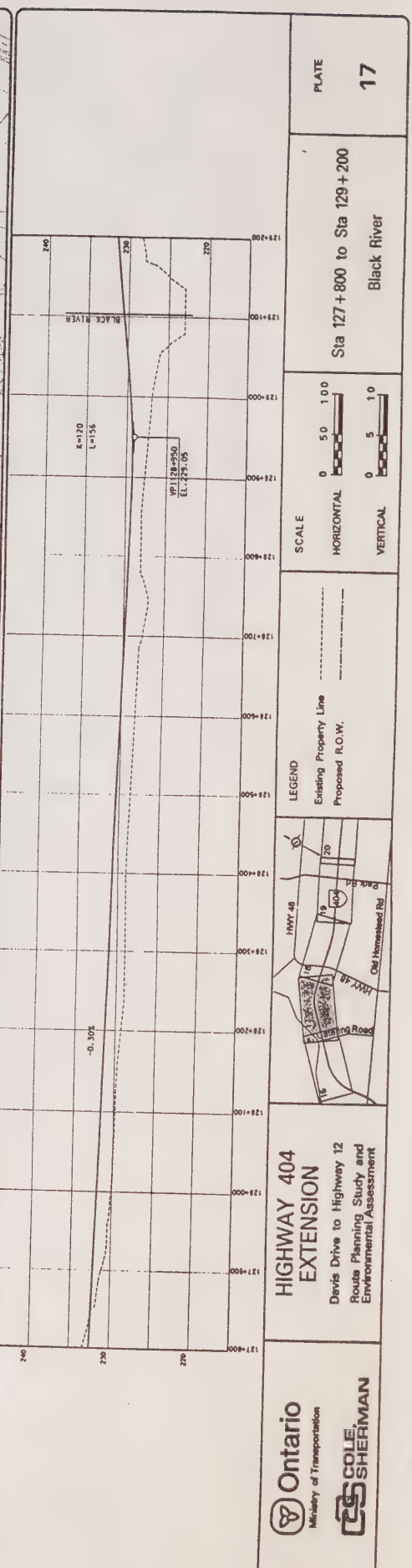
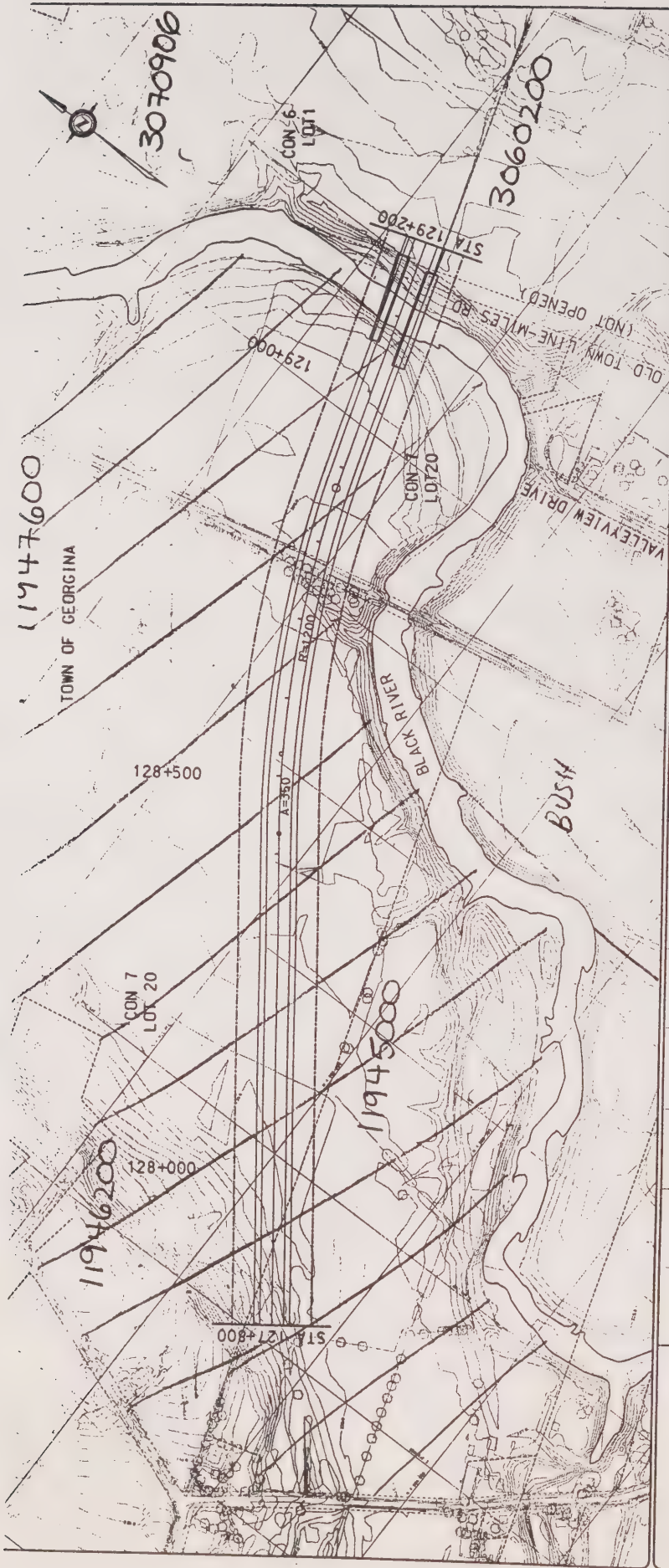
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VERTICAL 0 5 10

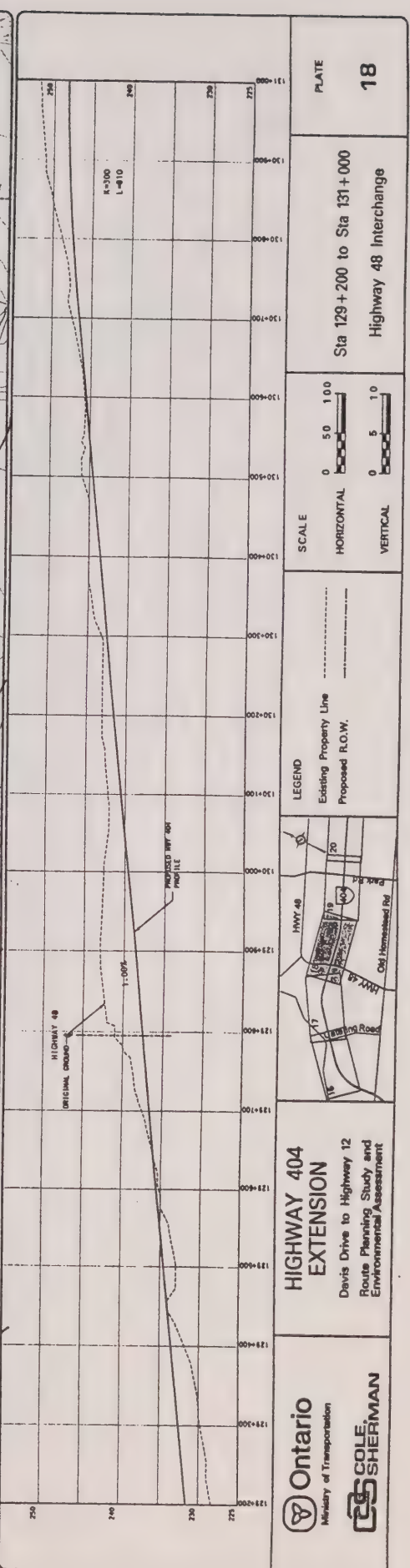
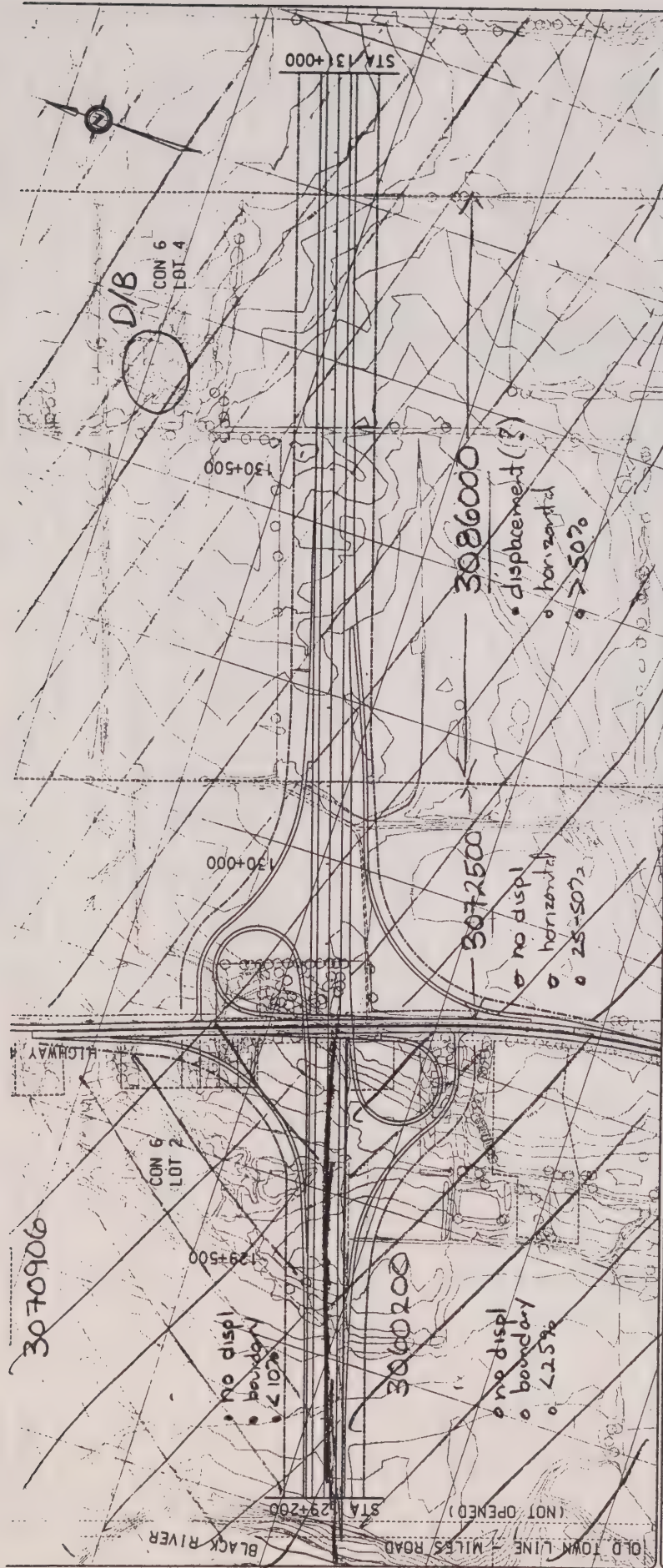
PLATE
Sta 120+600 to Sta 122+400
Warden Avenue

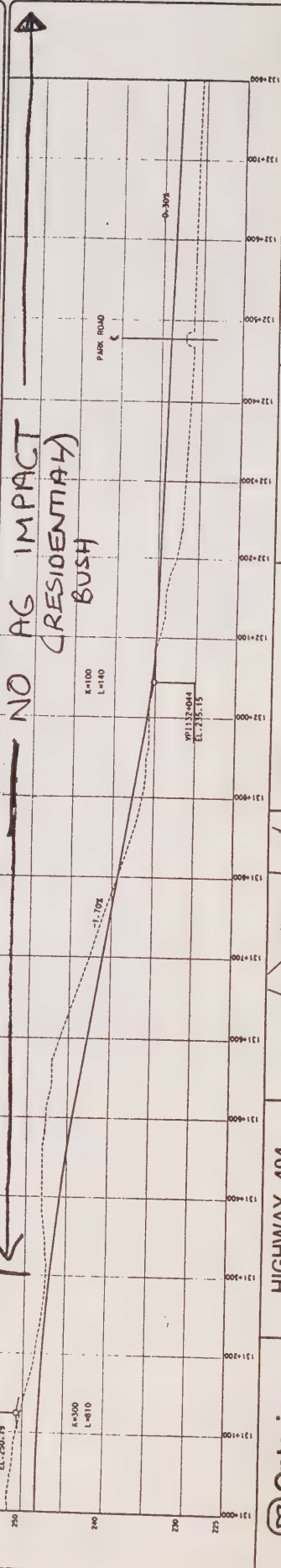
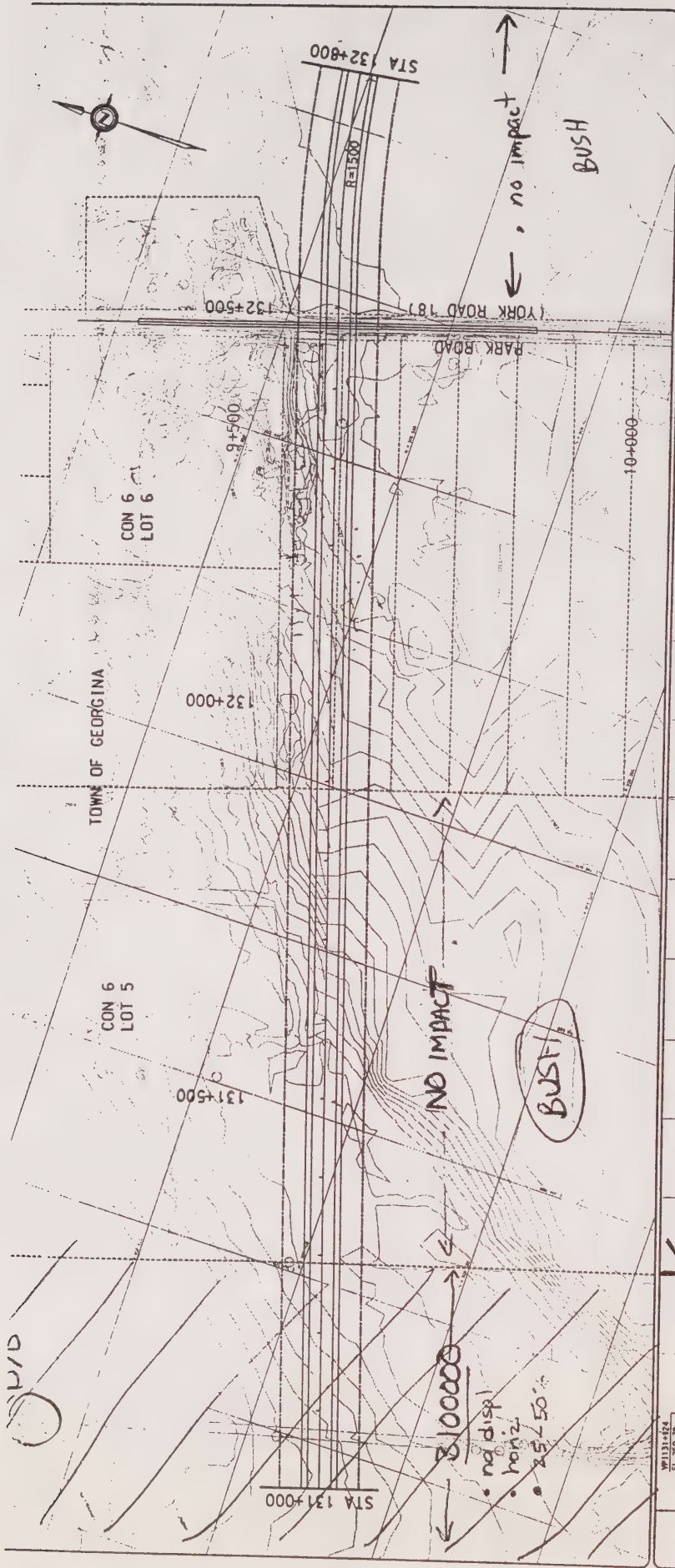


 Ontario Ministry of Transportation COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment		LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL 0 50 100 VERTICAL 0 5 10	Sta 124+200 to Sta 126+000 Old Homestead Road	PLATE 15
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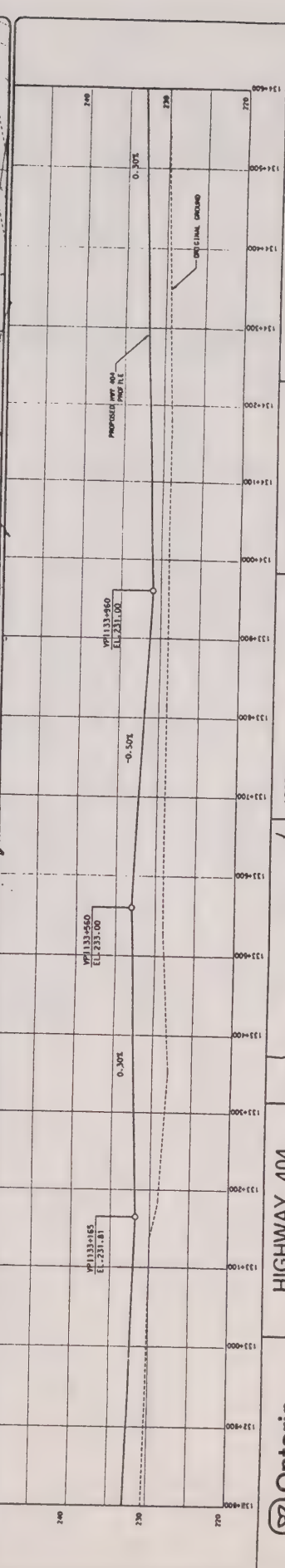
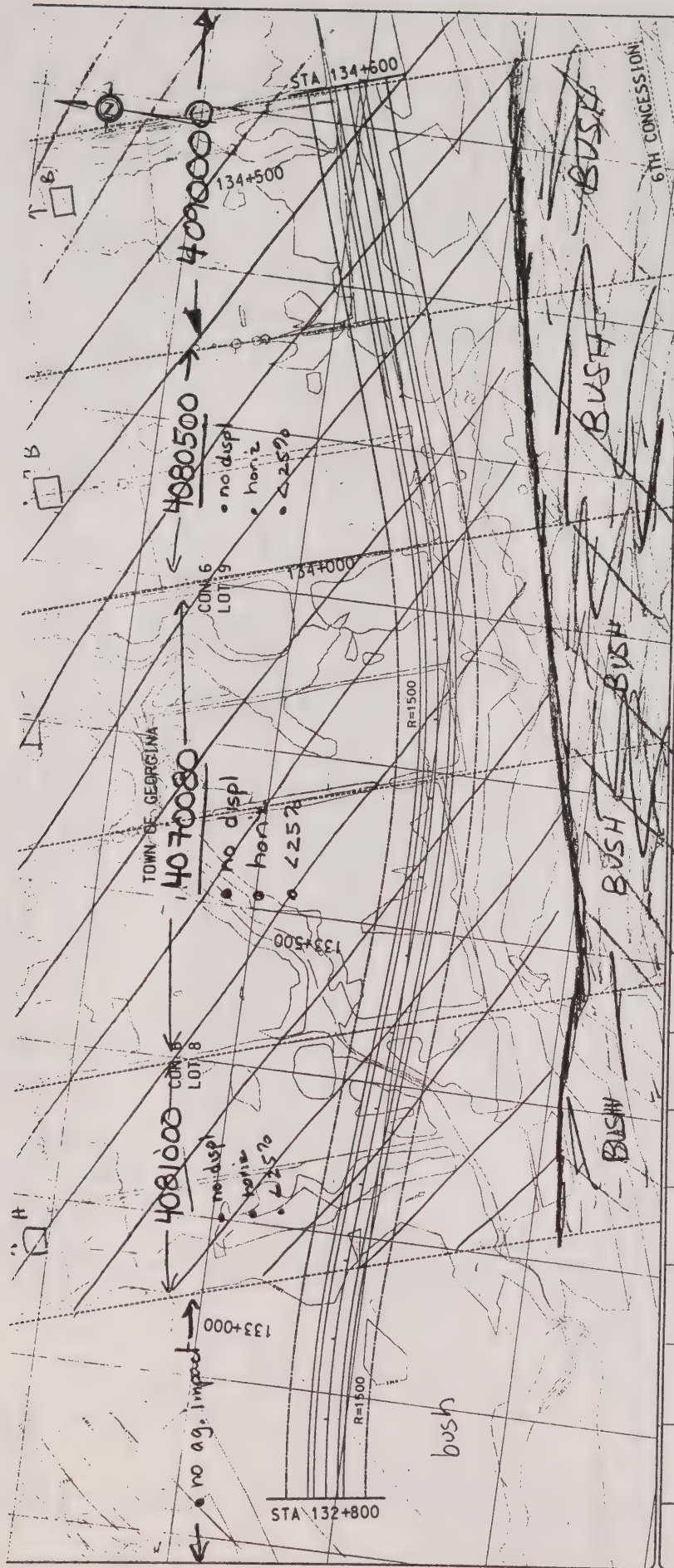




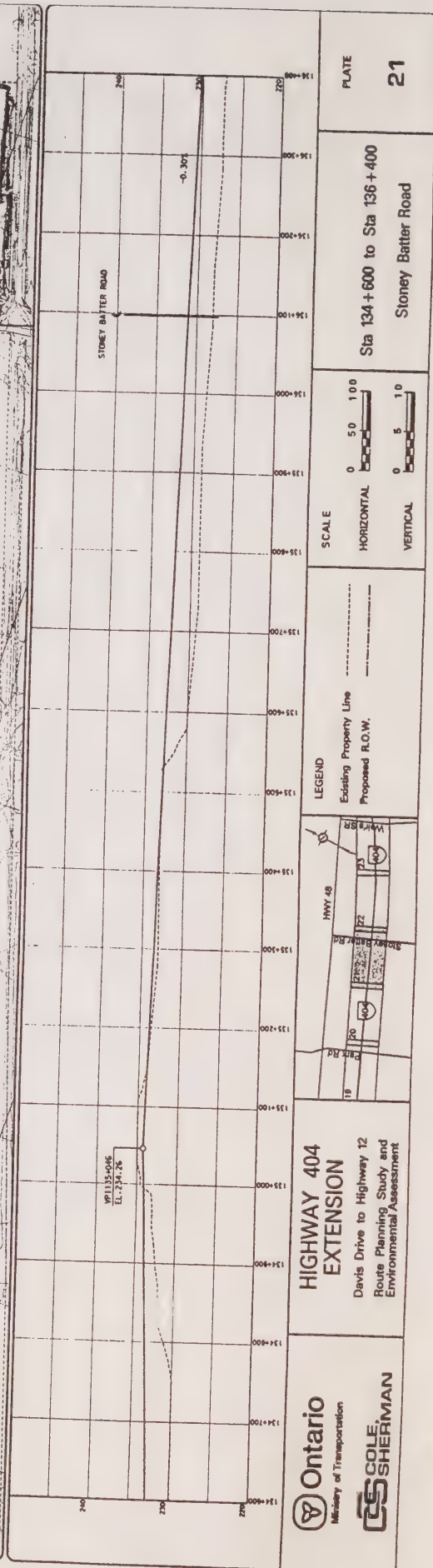
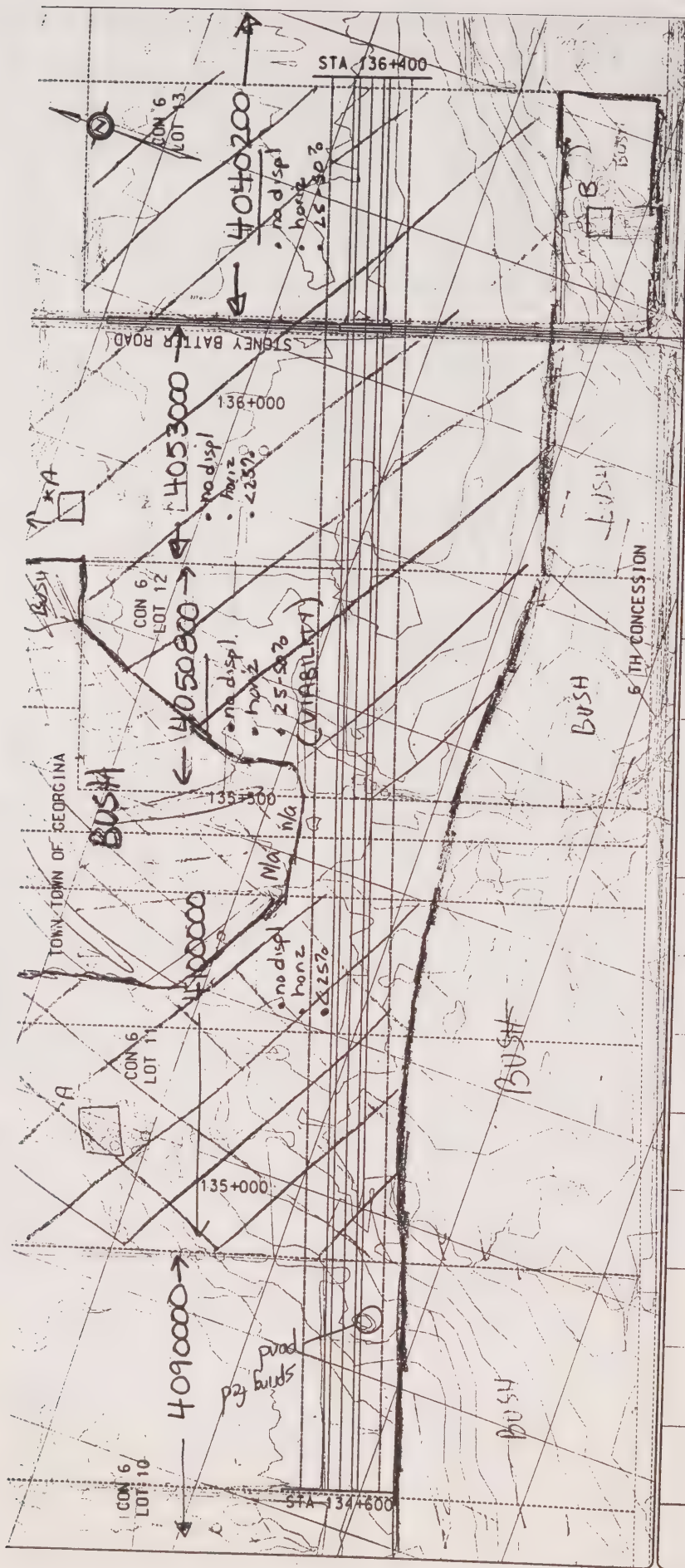


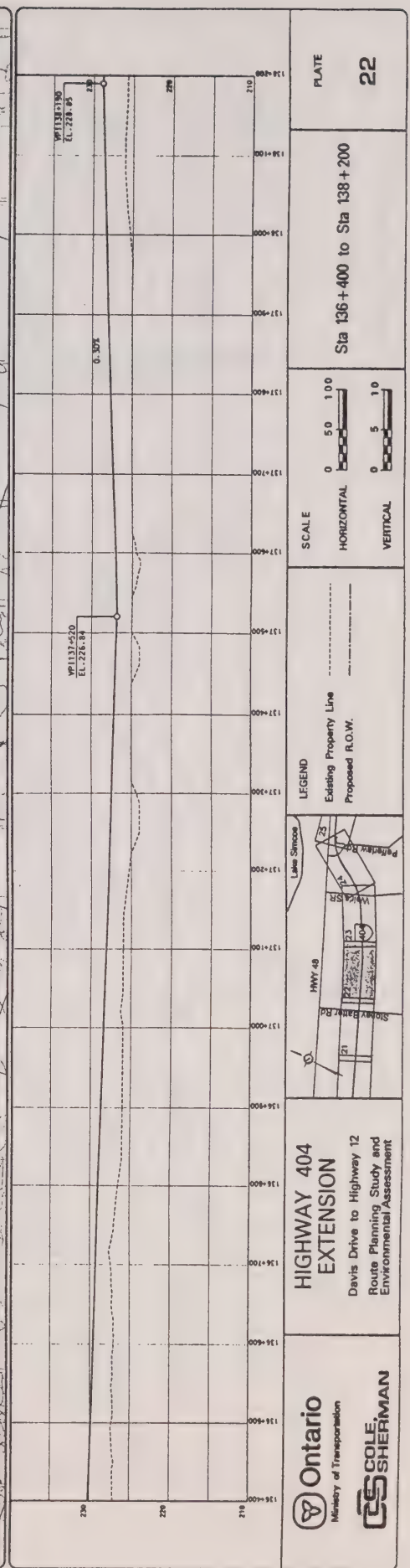
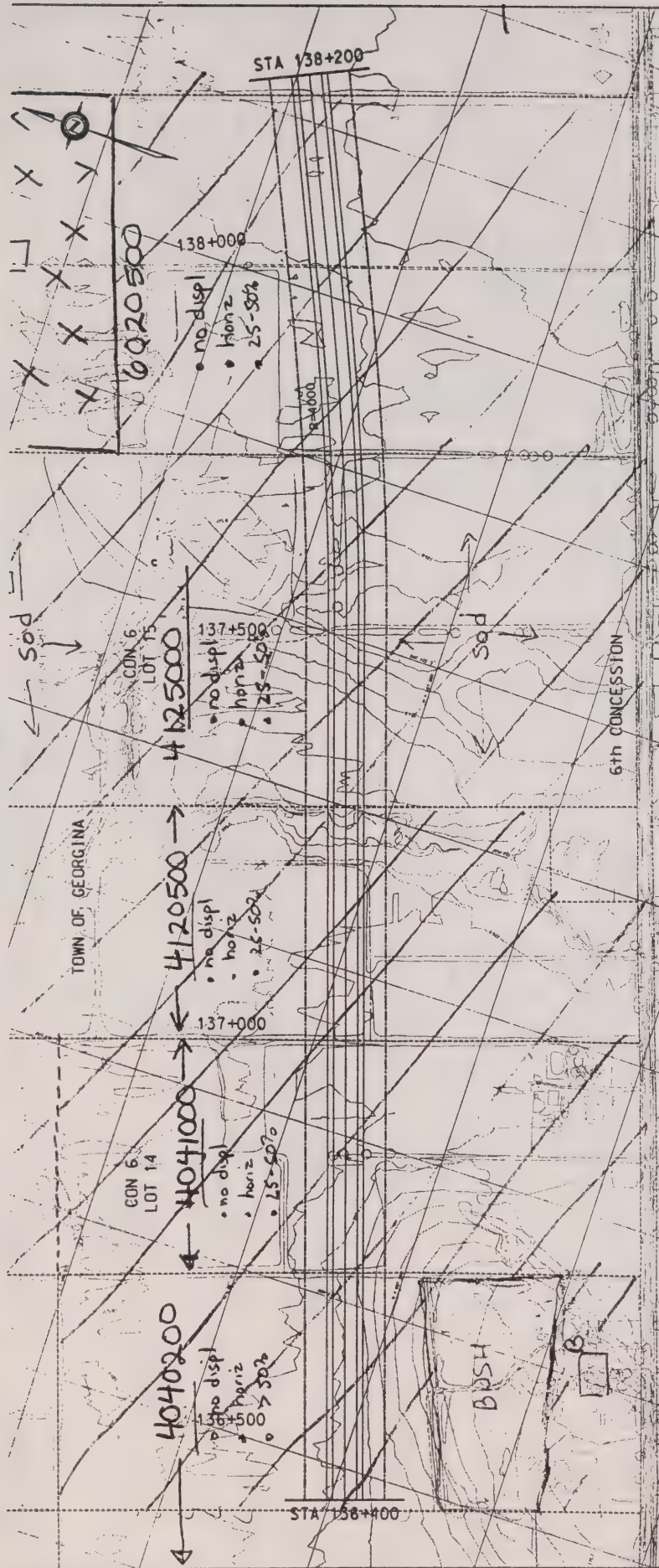


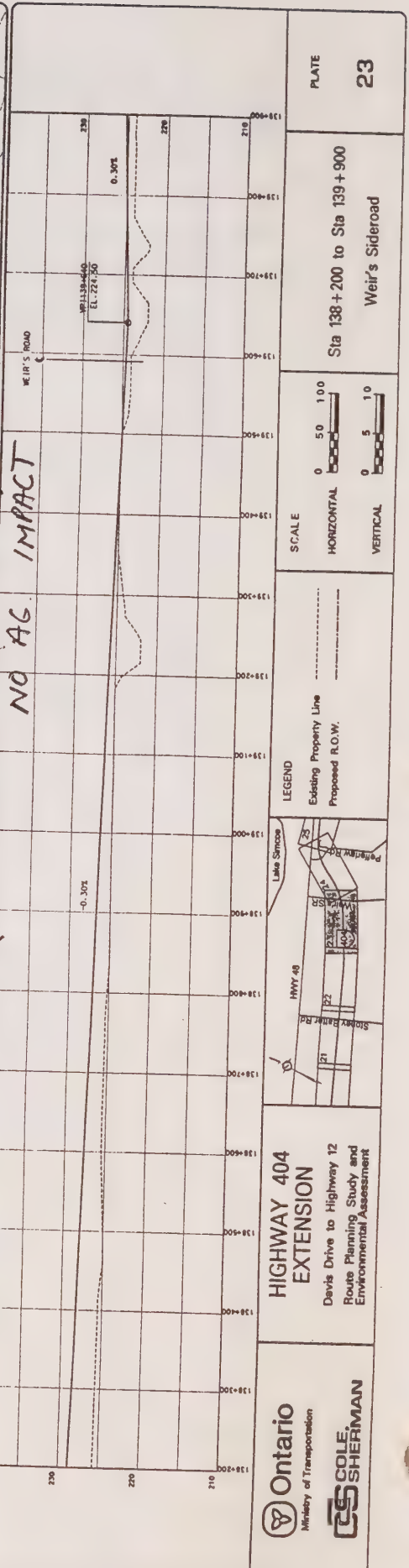
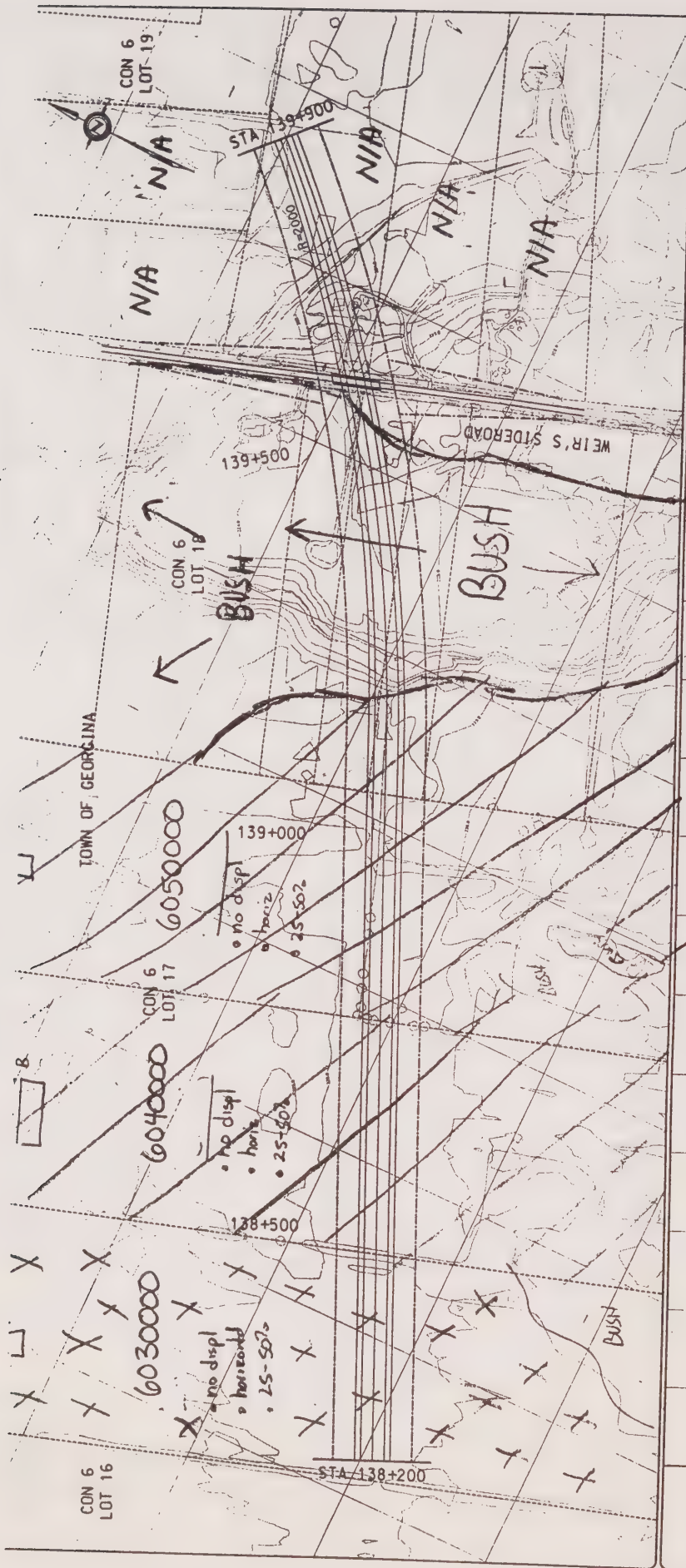
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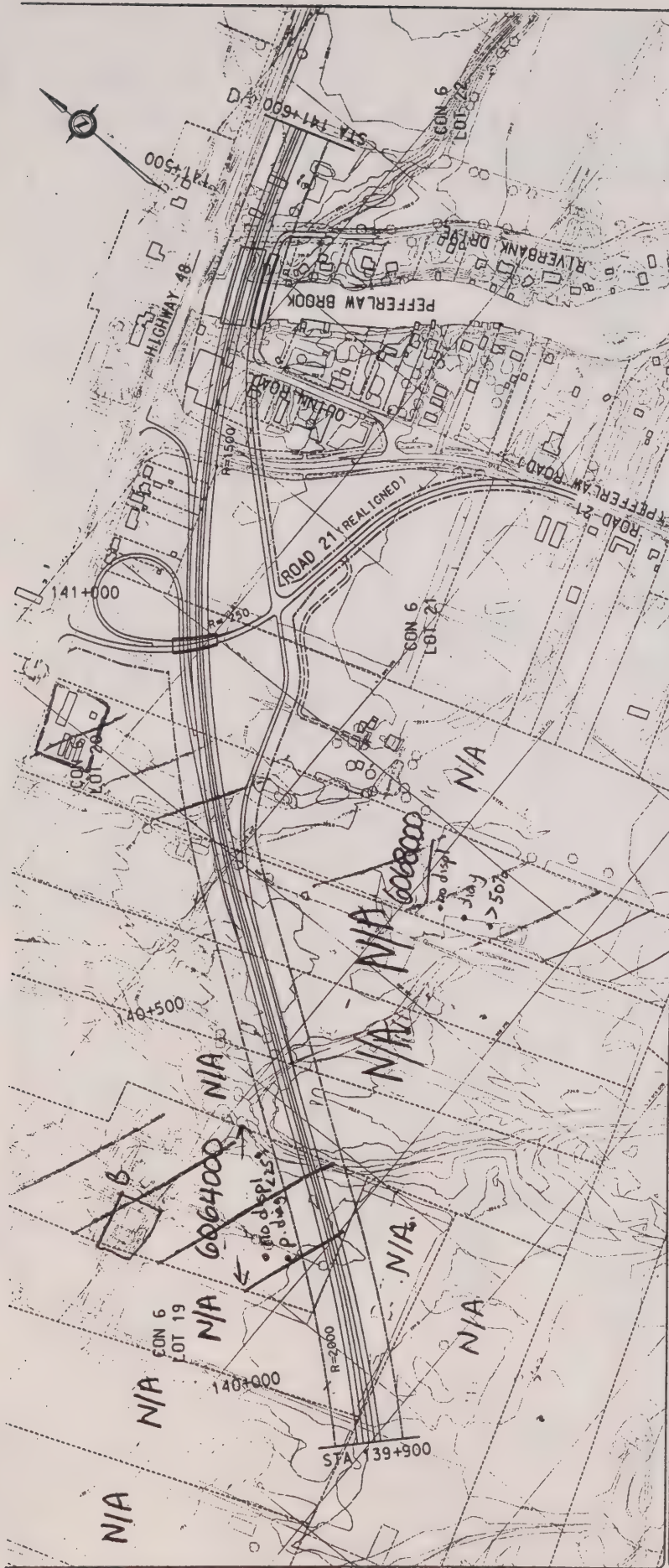


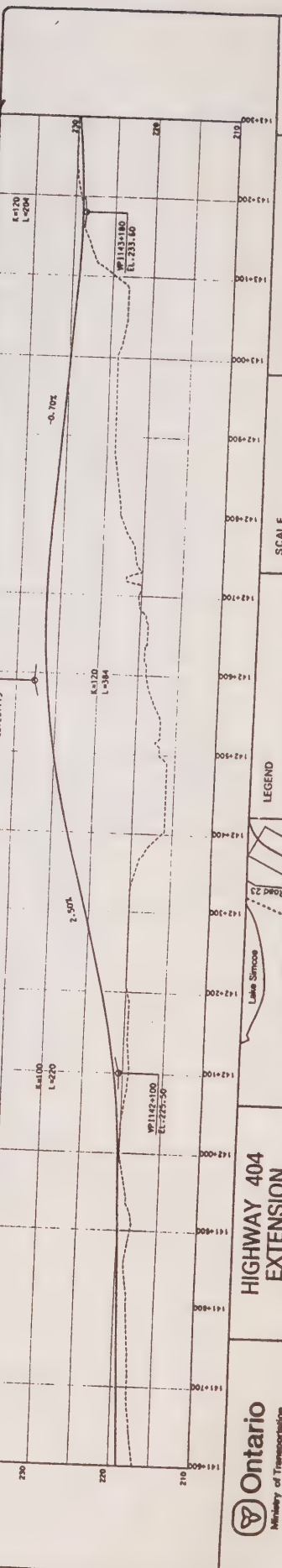
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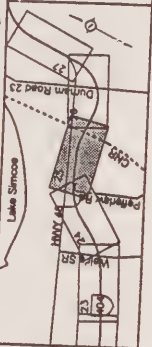




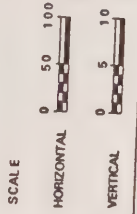




HIGHWAY 404 EXTENSION
 Davis Drive to Highway 12
 Route Planning Study and Environmental Assessment



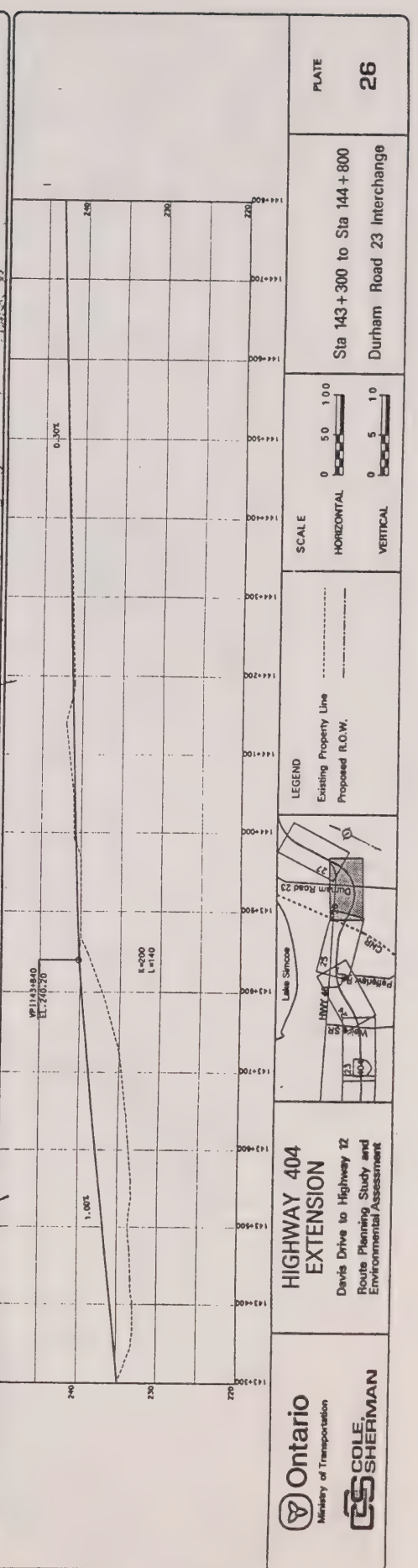
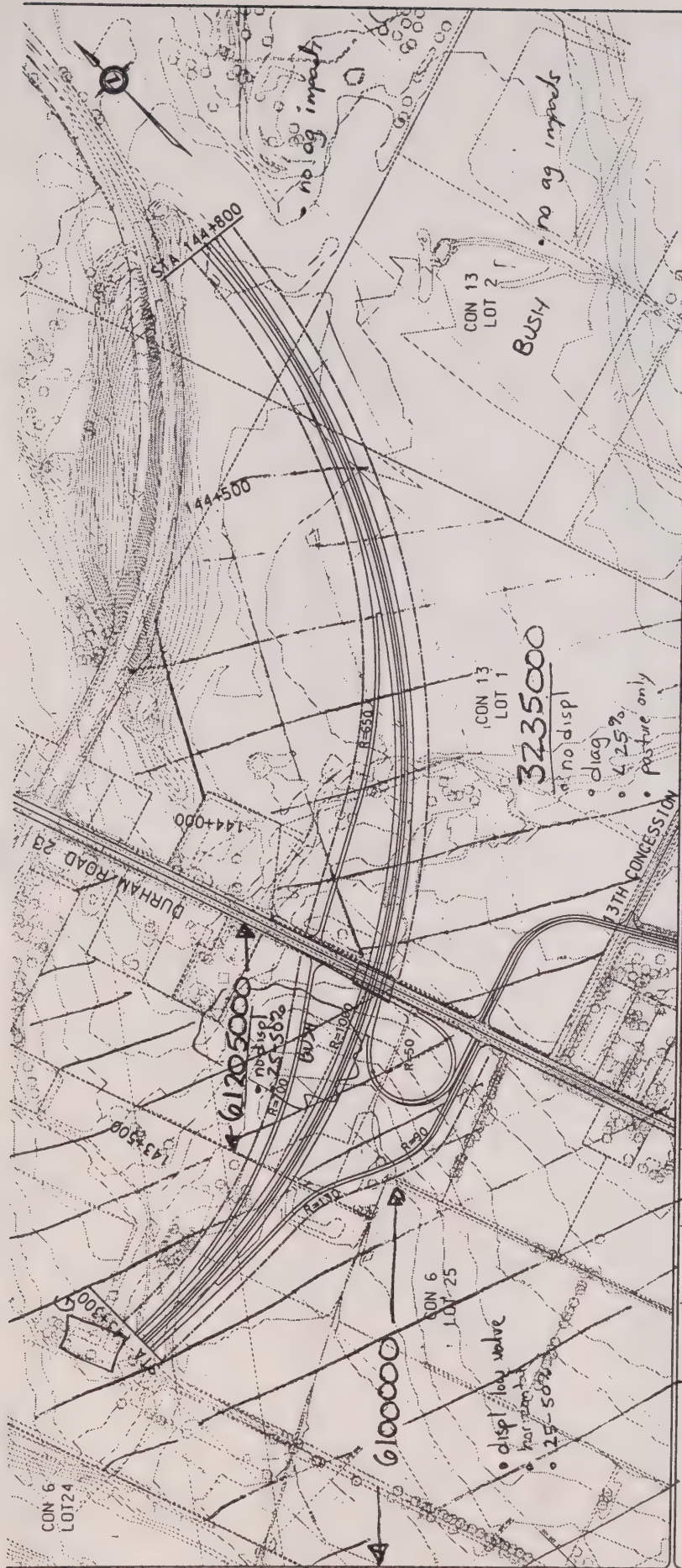
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 Proposed R.O.W.

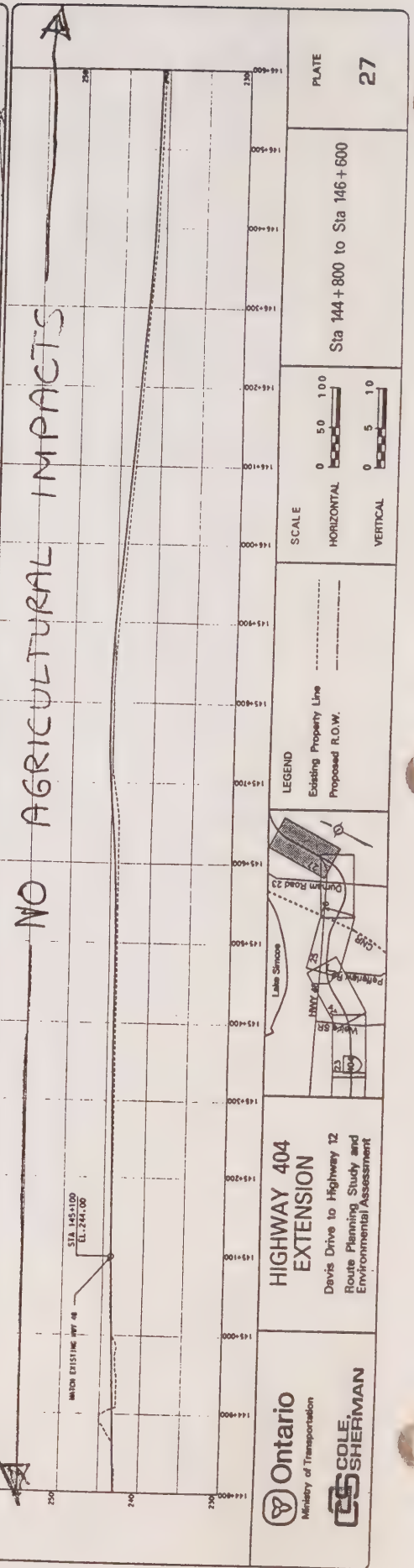
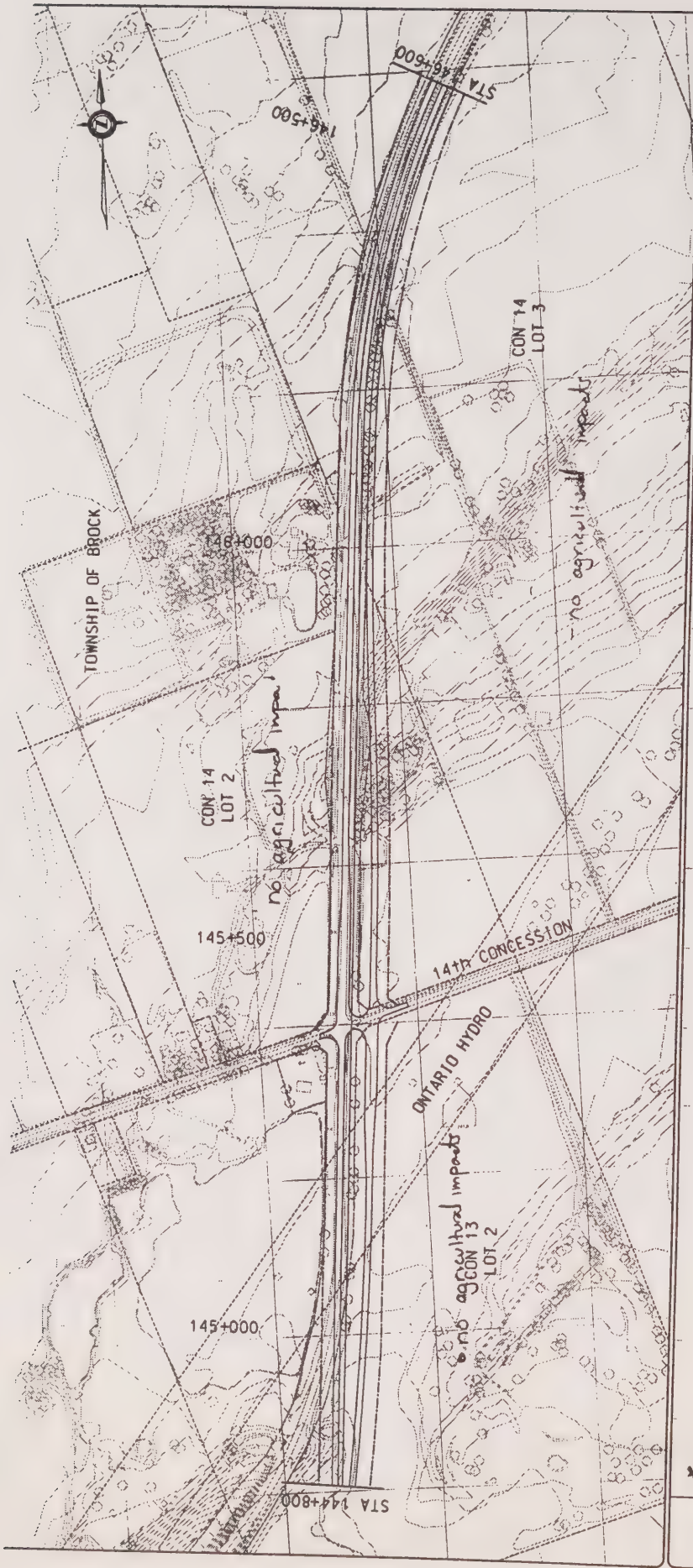


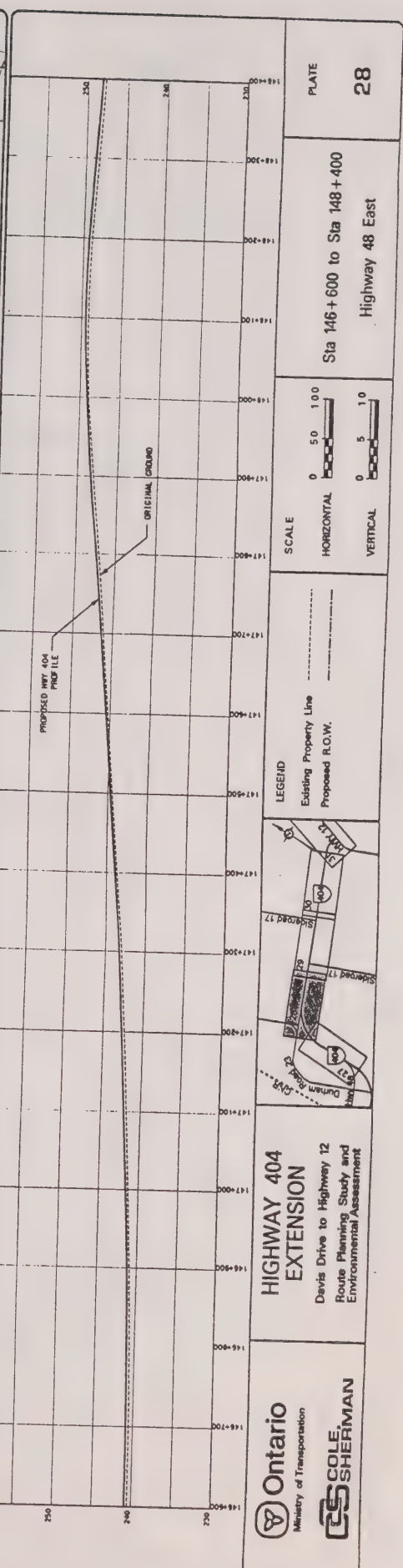
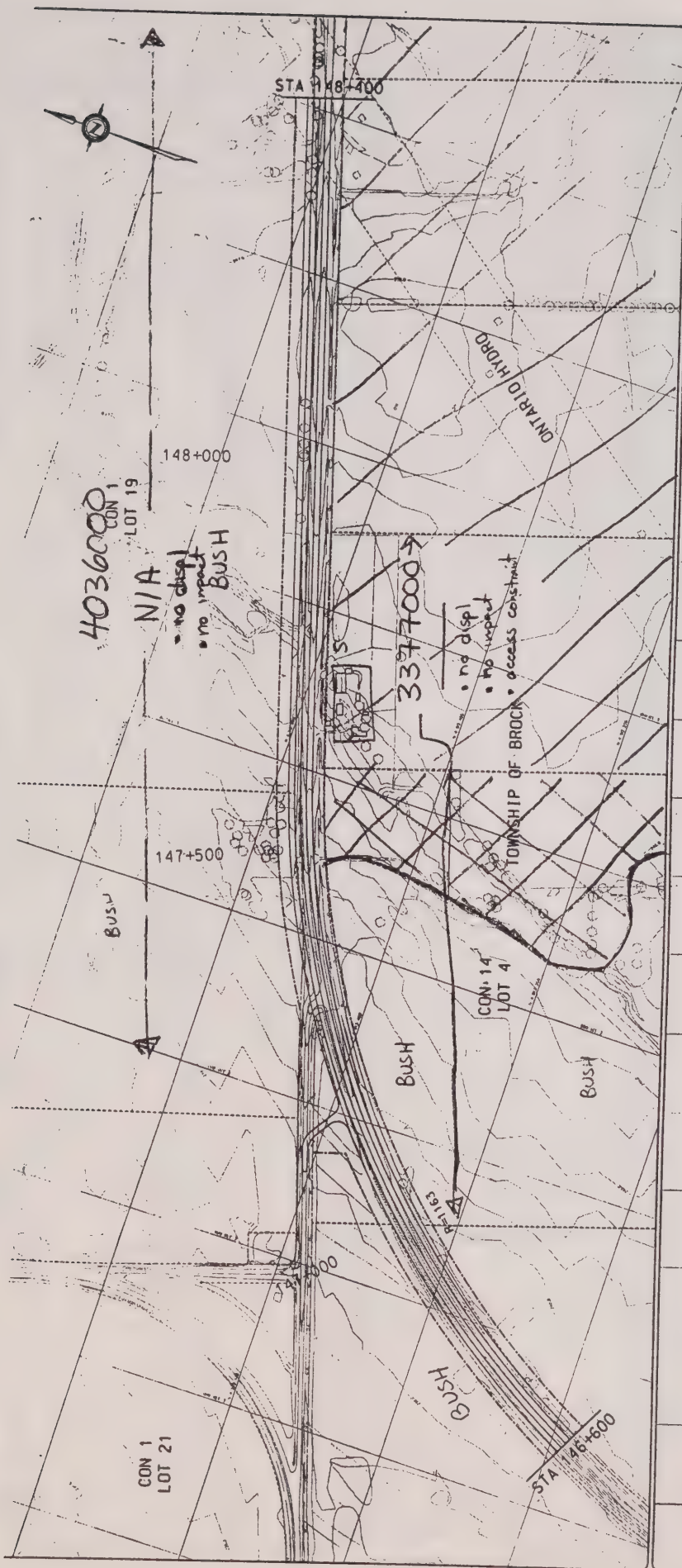
Sta 141+600 to Sta 143+300

PLATE

25







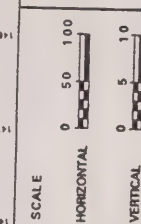
Ontario
Ministry of Transportation

COLE SHERMAN

HIGHWAY 404 EXTENSION
Davis Drive to Highway 12
Route Planning Study and Environmental Assessment

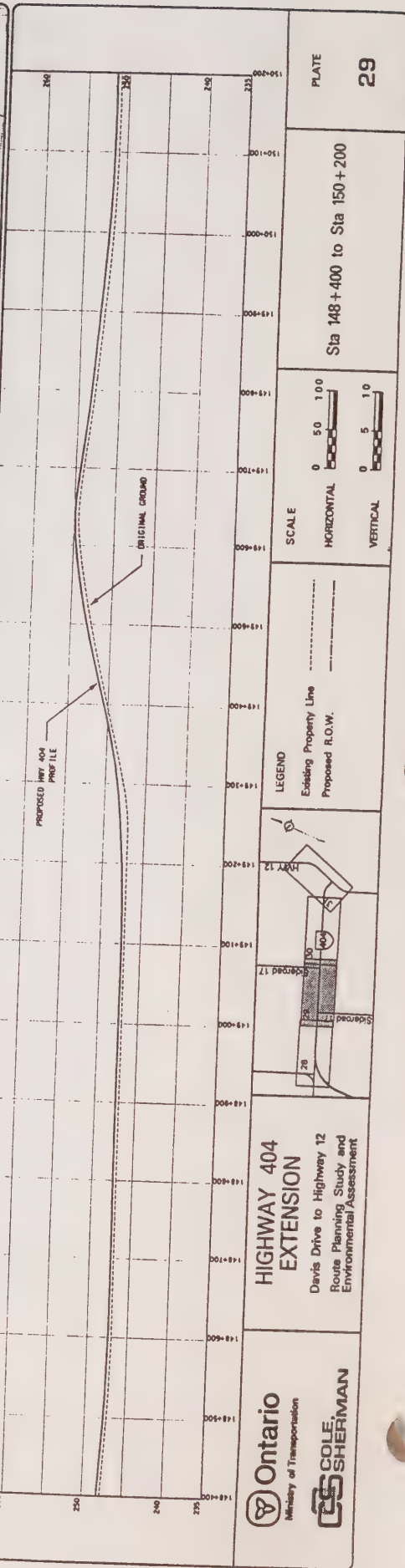
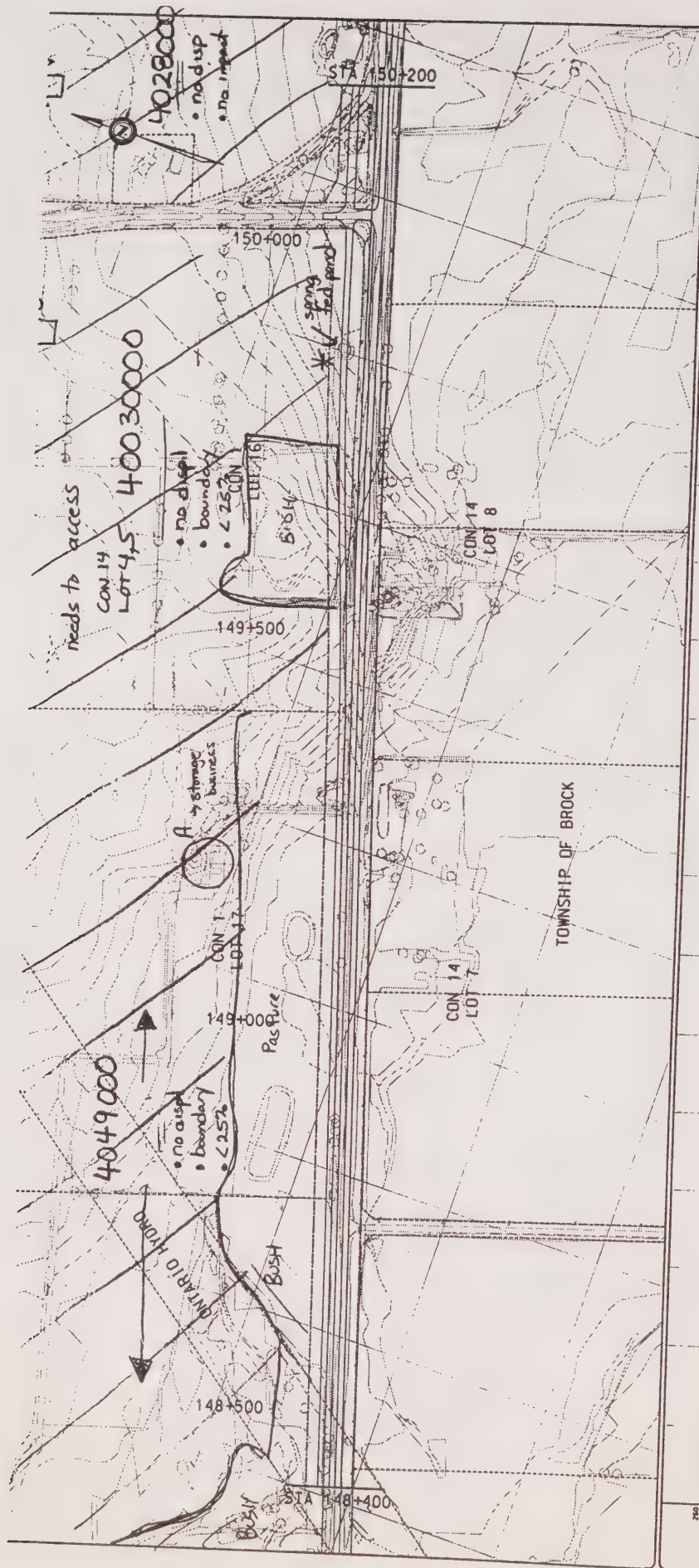


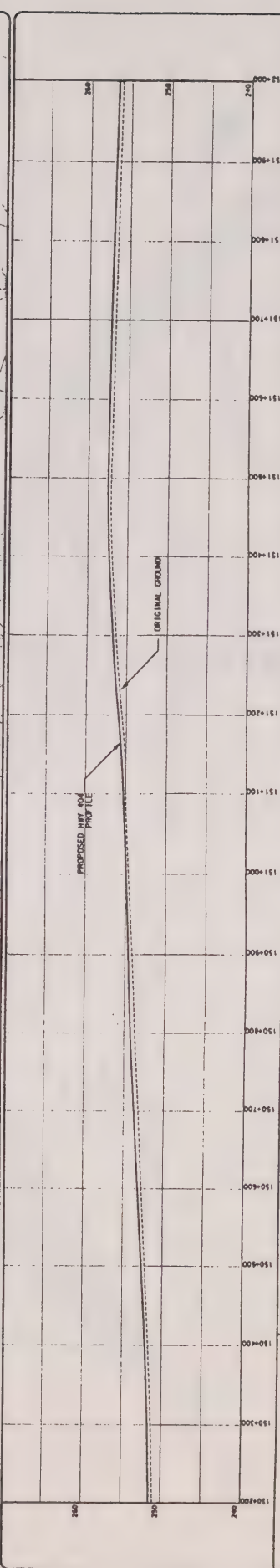
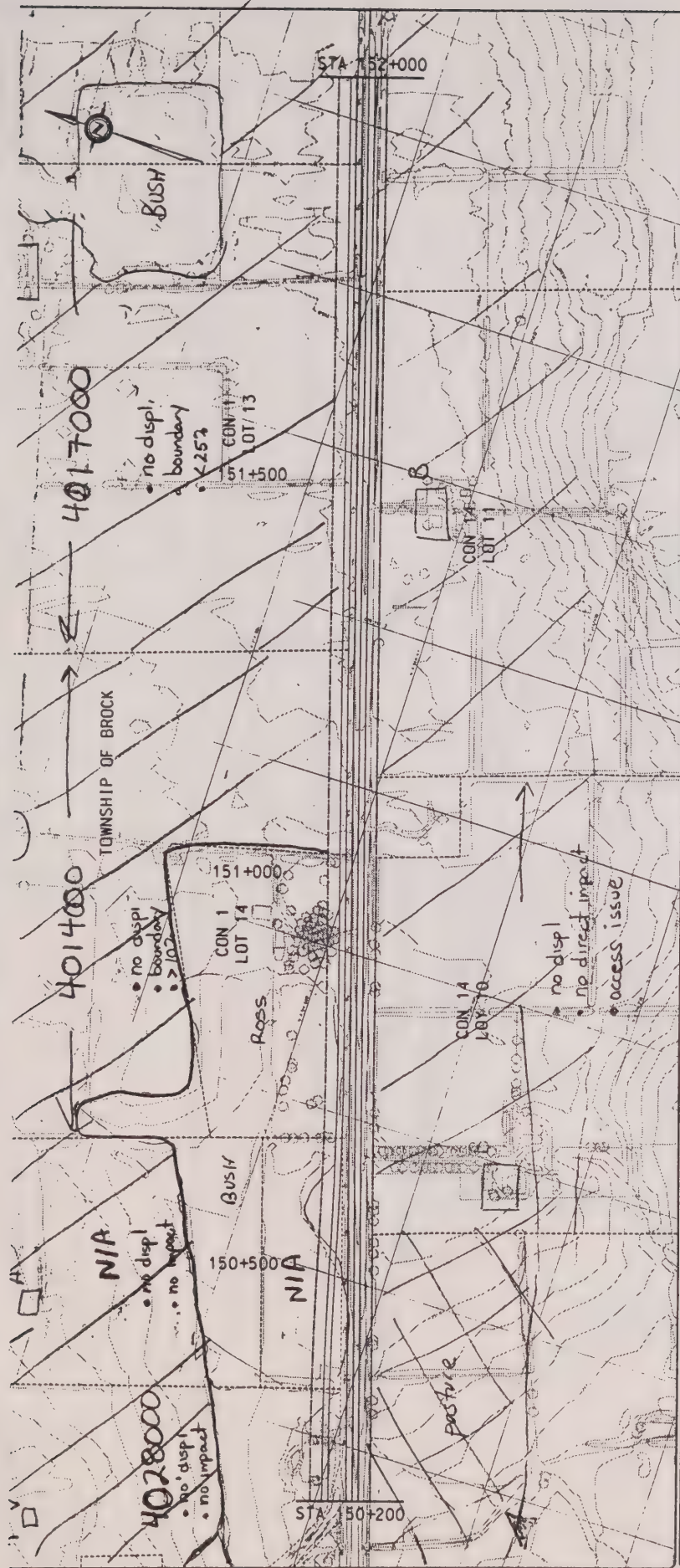
LEGEND
Existing Property Line
Proposed R.O.W.



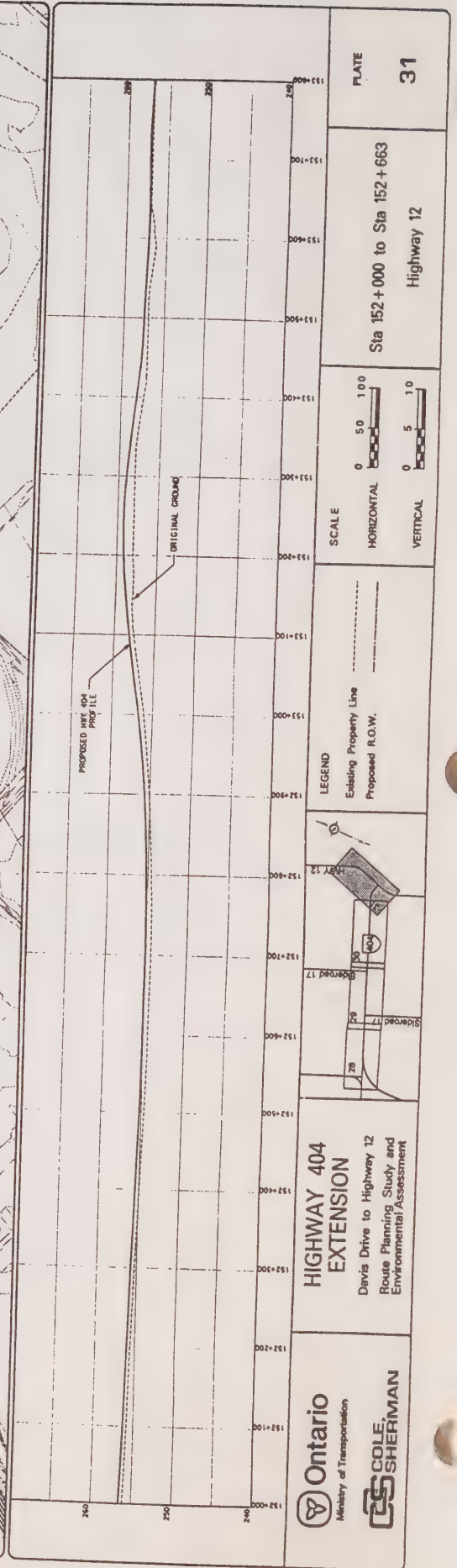
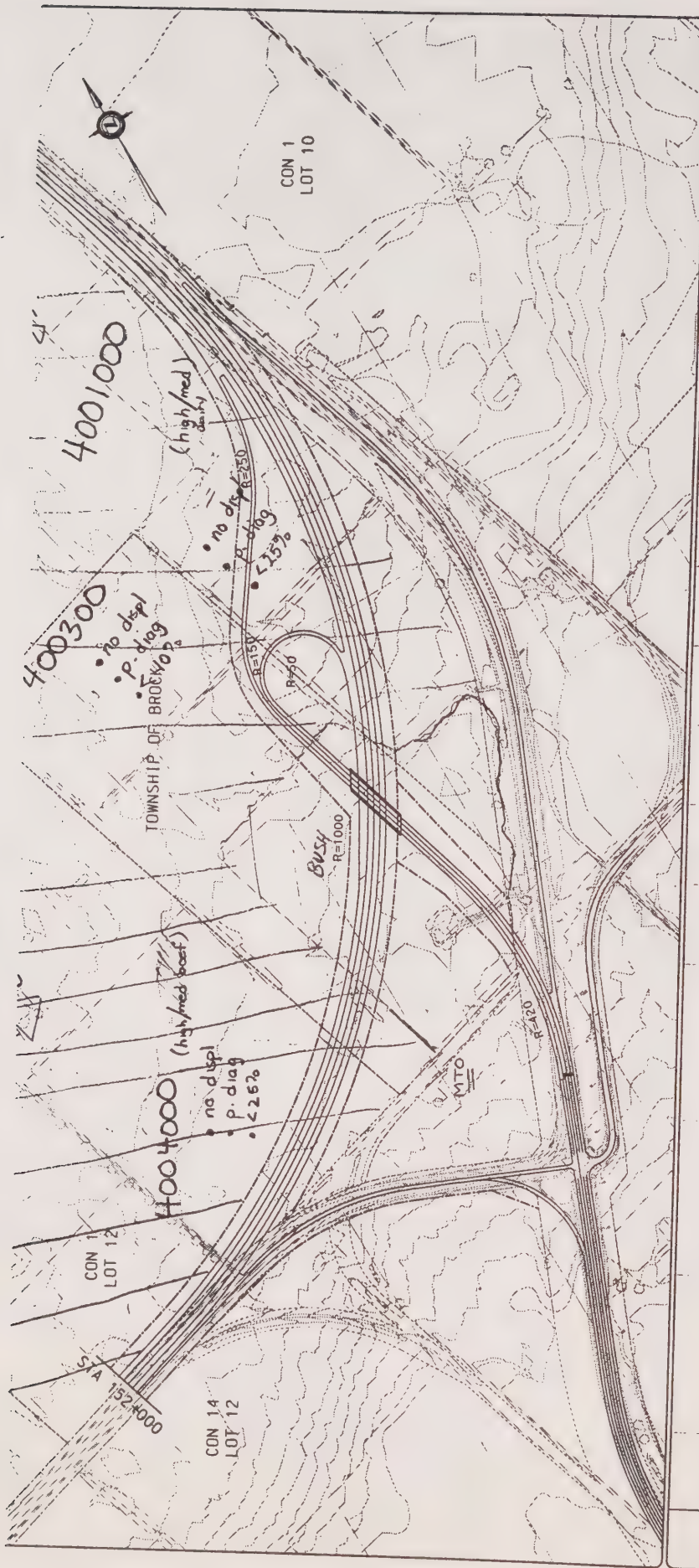
Sta 146+600 to Sta 148+400
Highway 48 East

PLATE
28





 COLE SHERMAN	HIGHWAY 404 EXTENSION Davis Drive to Highway 12 Route Planning Study and Environmental Assessment	 LEGEND Existing Property Line Proposed R.O.W.	SCALE HORIZONTAL: 0 50 100 VERTICAL: 0 5 10	PLATE Sta 150+200 to Sta 152+000 30
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Ontario
Ministry of Transportation

COLE
SHERMAN

HIGHWAY 404
EXTENSION

Davis Drive to Highway 12
Route Planning Study and
Environmental Assessment



LEGEND
Existing Property Line
Proposed R.O.W.

SCALE
HORIZONTAL
VERTICAL

Sta 152+000 to Sta 152+663
Highway 12

PLATE
31

APPENDIX 9 PRE-SUBMISSION REVIEW

ENVIRONMENTAL PLANNING AND ANALYSIS BRANCH

10th FLOOR

Phone: (416) 314-7014

Fax (416) 314-0444

December 2, 1997

**Mr. Steve Jacobs
Senior Project Manager
Planning Office, Central Region
Ministry of Transportation
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8**

Dear Mr. Jacobs:

**Re: Draft Environmental Assessment (EA) Report
Highway 404 Extension, Davis Drive to Highway 12**

Technical staff of the Ministry of Environment (MOE) have reviewed the above noted document and have a number of comments. The review is based on the requirements of the Environmental Protection Act, the Ontario Water Resources Act, the Pesticides Act, and associated policy and program areas.

It is important for the proponent to identify the Ministry's role with respect to the Environmental Assessment Act. The Environmental Planning and Analysis Branch undertakes the Ministry's technical review of EA matters and comments are based on the Ministry's mandated areas of interest. The Ministry's mandated areas of interest include: air quality, groundwater and surface water effects, waste management/disposal issues, noise, land use compatibility issues, and pesticides use. The Environmental Assessment Branch comments on compliance with the Environmental Assessment Act.

The draft Environmental Assessment (EA) document was circulated to the Noise Assessment Unit of Approvals Branch, Ecosystem Science Section of Standards Development Branch, and the Ministry's Central Regional Office. The following issues have been identified:

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GENERAL COMMENTS

This draft environmental assessment suffers from poor organization: a solid editing and organizing effort should be made before the document is submitted in its final form. There are statements in the document which lead the reviewer to think that only the most cursory treatment of environmental factors has been made, yet in other parts of the document where the same topic is discussed, it is evident that greater consideration had actually been given to the topics. This problem makes the document difficult to read and absorb, and in all likelihood, makes it longer than it needs to be. The Appendices would benefit from the use of tabbed dividers.

The Natural Environment Appendix is remarkably thin, given the extensive "greenfield" portions of the proposed ROW. The general philosophy of storm water management has been captured, but its treatment is inadequate given the physical characteristics of the area through which the extension is to be constructed. There should have been more discussion of the types of impacts anticipated, and suggestions for their mitigation. Given the extensive "greenfield" portions of the ROW, it would seem reasonable at this stage to be providing some direction or proposals for proper storm water management. Even though the EA has noted that the applicable storm water documents in existence at the time of construction will be used, reference should be made to application of this Ministry's 1994 Storm Water Management Guideline to design and construction documents and practices.

The issue of stream and river crossings has been reasonably addressed through the use of long span bridges and open footing culverts. It remains to be seen how these features will actually be accommodated in and implemented by the design and construction documents.

A weakness of this EA is the absence of reasonably rigorous technical documentation (e.g., hydrology and hydrogeology studies) upon which to base decisions on preferred route selection and/or route segment selection and assembly. As this area is characterized by fairly complex surface water and ground water features, the risk in this approach is that these studies, which will be required, may reveal at the design and construction stage that the adverse effects cannot be mitigated, or that they may be far more costly than anticipated. Given the absence of this type of technical documentation, it is imperative that it be provided well in advance of any construction activities to not only afford sufficient time for its review, but also to permit changes to the ROW if that should prove necessary following review of the studies.

A review of topographic maps for the proposed route indicates that there will be numerous stream crossings with this project. At some locations, particularly the Maskinonge River, the Black River and the Pefferlaw Brook there will be swampy or peat areas associated with the flood plains. This may require dredging for a stabilized roadbed or pile driving for bridge structures. Either one of these operations could have impacts on the shallow groundwater systems as well as the surface water systems.

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SPECIFIC COMMENTS

GROUND WATER

For ease of review, the preferred route has been divided into sections which tend to correspond with the geographical township boundaries and physiographic boundaries.

Georgina (Georgina) - Sutton to Brock Townline

Through this section the area is underlain by Lindsay formation limestone. The rock surface dips gently to the south-southeast but is rolling in an east west direction. This rolling topography for the bedrock surface creates a series of ridges and valleys which in profile looks much like an irregular sine curve.

The land surface is generally very flat through this section but overall has a gentle slope to the north towards Lake Simcoe. The overburden becomes thicker to the south and the west. From the map of the route, it appears that the east portion of this section (Pefferlaw to Townline) parallels within a few metres or replaces Highway 48. There are a number of residences and businesses along this section, some of which use dug/bored wells as a source of potable water. South of Highway 48 (within 450 m) the overburden varies from 12 to 18 m in thickness while along the highway it may be closer to 9 to 15 m. As there may be no records for the older dug/bored wells along this stretch, care will be needed in their assessment to provide baseline information against which to measure any impacts from roadway development and operation. During construction, vibrating compacting rollers might be a problem through this stretch. This can be a difficult area in which to obtain adequate quantities of good quality water at the best of times, and most of the water suitable for domestic purposes is obtained in the overburden or the top metre or two above the bedrock. Mitigation of impacted shallow wells by drilling replacement wells into the bed rock is not likely to be very successful.

The rest of the section is sparsely populated and there are not likely to be many concerns until the Highway 48 south crossing. At the 48 south crossing there are a number of residences in this area, some of which do employ shallow dug or bored wells. This area may require some work to define potential impacts from road construction.

Georgina (North Gwillimbury)- Sutton to Ravenshoe Road

The topography and physiography change in this section. The topographic surface is rolling and a number of drumlins are encountered as most of this section lies within the Peterborough Drumlin Field. The overburden thickens in this area to the west and dug wells, bored wells and drilled wells can probably be found in equal numbers.

In the area of Catering Road and Cryderman's Road there are dug wells and some shallow drilled

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wells. Soils tend to be sandy and deeper in this area so that replacement of wells, if necessary, would not likely be as difficult as in the previous section. The number of drumlins in the middle and south portion of this section should be noted, as some of them contain sand or silty sand layers, covered by a clay veneer. The sand layers therefore hold water and in some areas are tapped as a domestic water supply. When the clay veneer or the layer is breached by a road cut, this can allow that unit to drain leaving the wells dry. This type of dewatering situation rarely corrects itself and replacement wells are usually required.

In the southern part of this section, Concession 4, Lots 2 and 3 there are two major features lying within 1200 m or less of the proposed route. In Lot 2 there is the Georgina Landfill site operating under C of A A230801. This site is scheduled to close by December 31, 1997. A small portion of the east side of the site has been severed and will be used as a transfer and household hazardous waste site. Lying immediately north of this site in Lot 3 is the Thane smelter site which contains a large deposit of slag from an aluminum re-refining company.

East Gwillimbury - Ravenshoe Road to Newmarket

From Ravenshoe Road south, the area is still part of the Peterborough Drumlin Field until in the proximity of the Queensville Sideroad, where the area is described as part of the Schomberg Ponting south to Newmarket. Running more or less down the middle of Concession 3, the proposed highway avoids most of the populated areas although it will likely cross several drumlins and come close to homes on the east-west roads. Overburden in this area is very thick. At the Queensville Road, lying approximately 980 m. to the east of the highway, are the new Queensville Municipal Wells 1 & 2 which are 80+/- m. in depth. The watermain from these wells follows the Queensville Road west to Leslie and passes under the proposed route. At the Doane Road lying approximately 980 m. to the west of the proposed highway are the Sharon Municipal Wells 3 & 4. All four wells are deep and would appear to have sufficient separation distance such that they are not likely to be impacted by shallow road construction. Vibration from compacting equipment or pile driving, if it occurs in this area, may have potential to create turbidity problems with the wells.

The locations of private water wells for both domestic and agricultural use should be noted on the route maps within 100 m of the ROW. Activities which occur in the ROW (construction, maintenance, storm water management, vegetation control) all have the potential for adverse effects on groundwater supplies- especially shallow groundwater.

The upper and lower tier municipalities should be consulted regarding the existence of draft approved and final approved (unbuilt) development plans, within 100 m of the ROW, which will be serviced by private individual wells. If there are no development plans within 100 m of the ROW, the EA should state this, so that there is no question at a later date as to whether this was considered during the environmental assessment.

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WASTE/CONTAMINATED SITES

On Vachell Road (Concession 4, Lot 17, Town of Georgina) approximately 1,900 metres south of the proposed highway there is an old landfill, site number X7036, which also operated for a short time as a transfer station under Certificate of Approval A230802. This site was closed in 1971. It does not appear likely that this closed landfill would be impacted by the proposed route, but it is within the study area.

In Brock Township, in Concession 15, Lot 1, immediately south of the existing highway, there is an old landfill site, listed as site X1005 in the Waste Site Inventory. This site may be in the path of the new highway and may require additional investigation. This site was reportedly closed in 1967 and has minimal cover material.

There is an active landfill site, A390602 in Concession 13, Lot 6, Brock Township. The total area of the site as listed in the inventory is 100 acres. This site is the largest active site in Durham and will be in use for at least the next 20 years.

These sites should be properly noted on the route maps, and information should be provided in the EA as to how landfill sites will be avoided during development of the highway.

There do not appear to be any gasoline stations over most of the proposed route. At Pefferlaw, the highway appears to cross Pefferlaw Brook in the vicinity of Quinn's Marina. The marina may have buried tankage for servicing boats. There is also a Beaver gas station on the northwest corner of Highway 48 and Lakeridge Road (townline). A building on the southwest corner may have been a gas station at some time in the past.

If contaminated sites are encountered, the Ministry's District Office in Ajax should be contacted for assistance. If petroleum products are encountered during excavation, care should be exercised to ensure that injury or groundwater contamination do not occur.

ECOSYSTEM PLANNING/WATERSHED MANAGEMENT

MOE encourages proponents to incorporate ecosystem principles in their decision-making processes when conducting environmental assessments. Ecosystem principles are important in evaluating the cause and effect relationships between the proposed undertaking and the biophysical environment and in evaluating structural and functional relationships among air, land and water. This Ministry, jointly with MNR, has produced a number of documents, including Watershed Management on a Watershed Basis: Implementing an Ecosystem Approach (June, 1993) and Subwatershed Planning (June, 1993) which provides a framework for achieving ecologically sound management of ecosystems.

In the formal EA submission, the proponent is encouraged to consider any relevant information related to ongoing or completed watershed/subwatershed plans and other ecosystem based studies for the study area and reference these as resources. In addition, goals and objectives from these plans should be incorporated, where applicable, into the planning, design and construction of the undertaking.

Watershed based studies provide the proponent with the necessary management focus and with relevant information for the formal EA submission. For this EA, these would include the Lake Simcoe Environmental Management Strategy and related sub-watershed management plans. The proponent is encouraged to reference and incorporate this information as part of the final EA submission.

NOISE/VIBRATION

General Comments

The proponent should consult with the local, regional and county municipalities to determine whether there are any draft approved/final approved unbuilt development plans that would place sensitive receivers (hospitals, schools, all types of residential buildings, etc.) within the projected noise impact zone. If there are approved (draft or final) development plans in place, the proponent will need to provide noise mitigation. For development plans which are currently on the books, but have not been draft approved, the proponent should consult with the affected municipalities to ensure that noise control will be included as part of eventual approval requirements of the development plans.

Potential noise impacts from construction activities should be measured from the edge of the ROW.

Evaluation Process

Alternatives

In accordance with Subsection 5(3) of the EA Act, the Draft EA Report has presented a number of alternatives to the undertaking and alternative methods of carrying out the undertaking and has, in a logical and easy to follow manner, evaluated the relative merits of each.

In general, we feel that the procedure used in the evaluation of the route alternatives was of sufficient detail to obtain a fairly accurate assessment of the relative merits of each route from the noise perspective.

However, we note in Exhibit 4.15B of the Main Report that the noise criteria used for the evaluation of the route alternatives was "the noise impact each alternative will have on adjacent receivers."

Section 3.3.3 of Appendix 2 of the Main Report should define the locations considered by MTO as being noise sensitive on highway EA's. It should also indicate why on this project, the only noise sensitive locations used in the analysis of route alternatives and in the more detailed analysis of the technically preferred route were homes located either in existing/approved residential developments or in trailer parks.

Recommended Route

Operation

In general, we are satisfied with the methodology and procedure used to evaluate the potential noise impacts due to the operation of the facility.

However, it should be noted that as a result of the proposed facility, according to Exhibit 5.9A of the Main Report, approximately 112 homes may be subject to increases in noise levels of 6 to 10 dB, 52 homes to increases of 11 to 15 dB and 22 homes to increases greater than 15 dB (i.e. resulting noise levels at least 3 times louder than the pre-existing ambient). Furthermore, according to Exhibit 5.9 B mitigation "may" prove to be feasible at about only half of these homes.

Due to the potential for high noise impacts along the recommended route, it is important that the Formal EA contain the maximum possible information on noise as well as on the commitments by MTO to reduce the noise which will be generated by the proposed facility. More specifically:

1. We note that the number of homes which may be subject to increases in noise levels of 5 to 10 dB as indicated in Table 11 of Appendix F of the Noise Report do not coincide with those indicated in Exhibit 5.9A of the Main Report. This discrepancy must be addressed.
2. In Section 3.3.5 (Page 14) of the Noise Report we note the statement that according to the MTO/MOE Noise Protocol: "The purpose of mitigation is to reduce (as close as technically possible) the predicted future project noise levels to the objective levels. The objective levels are the higher of the 'future-do-nothing' noise level or $L_{eq}(24h)=55$ dBA."

Section 3.3.5 should however acknowledge the fact that Table 1 of the MTO/MOE Noise Protocol also directs MTO to "mitigate to the ambient as administratively, economically and technically feasible." That directive is particularly applicable in the case when the increase in noise level exceeds 5 dB and where the pre-existing ambient noise level is less

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than 55 dBA, Leq(24h).

3. Section 5.4.3.2 of the Main Report should contain a commitment to the effect that:

"MTO will prepare a detailed Noise Impact Assessment Report and submit the Report to the Director of the Approvals Branch of MOE at least 3 months prior to the start of construction of the facility or any part thereof.

The Report will re-assess the potential noise impacts at all sensitive locations along the recommended route. At locations where the increases in noise levels will exceed 5 dB and where MTO is directly responsible for providing mitigation, the Report will contain a description of the control measures which will be applied and of their anticipated acoustical effectiveness. If control measures are not applied, reasons (technical/economic) must be given. In addition, locations subject to mitigation by residential developers should be clearly indicated."

4. Section 5.4.3.2 should contain a brief description of the increases (if any) in noise levels which are expected to occur along major roads in the area as a result of the proposed extension of Highway 404. As well, Section 5.4.3.2 should indicate the measures which the local municipalities will take in an effort to mitigate these types of impacts

Construction

In Section 5.4.3.2 we note the plan of action which will be taken by MTO in order to minimize noise and vibration impacts which will be generated during the construction of the facility. In addition, Section 5.4.3.2 should:

1. Indicate that the construction noise and vibration control measures will be specified in the Design and Construction Report and also included in the Detailed Noise Impact Assessment Report which will be submitted to the Approvals Branch of MOE.
2. Contain a brief description of MTO's Policy with regard to the mitigation of noise and vibration impacts due to pile driving and blasting operations as well as an indication of the general control measures and monitoring procedures normally used by MTO in order to minimize these types of impacts.

TEXT-SPECIFIC COMMENTS

1. On page 4, 3rd full paragraph, it is noted that property beyond the minimum ROW "may be required". If other property outside of the proposed ROW is to serve the purposes of and be part of the proposed undertaking, then it should be clearly identified as such, and

included in the EA. Otherwise, it should be removed entirely. What is being advanced here is a piece-meal approach to environmental assessment. Storm water management facilities, as accessory facilities, must be included as part of this EA, as they are one of the key mitigating measures for runoff impacts associated with a road way. Temporary easements, mitigation/compensation measures and access roads should also be clearly included as essential components of the EA, as their associated impacts will be a subset of the broader impacts created by the undertaking. In this same section, it is stated that if EA approval is obtained, MTO will be able to "make refinements to the alignment and right-of-way during the design phase". Although some *minor* adjustments may be required following approval, they should be restricted to within the ROW defined in the approved EA. This statement will require clarification, as it is unacceptable as it stands.

2. On page 5, Section 1.2.1.2, 2nd paragraph, and page 174, fish habitat is used as the definition of whether impact would occur to watercourses. This must be an oversight, because impacts on these watercourses can eventually find their way into other watercourses, where they could very well create an impact (sedimentation, salt contamination, etc.).
3. On page 173, Section 5.4.2.1, 2nd paragraph, it is stated that "Many of these potential impacts cannot be assessed in detail at this time given the level of detail that is available for the technically preferred route". What are the "potential impacts"? How can a decision be made on a preferred route if the potential impacts on stream crossings are not understood? The whole reason for conducting an environmental assessment is to fully evaluate a proposed route in terms of the least amount of impact and the best means of mitigating that impact.
4. On page 174, 2nd last paragraph, ditches and swails are important in that they provide useful functions of sediment collection and nutrient uptake.
5. On page 180, the discussion of impacts and habitat loss should include discussion on the expected impact to the local hydrologic regime.
6. At the top of page 192, notation should be included that well abandonment must be done in compliance with O. Reg. 903. It should also be noted that any septic systems falling within the ROW will require decommissioning in compliance with O. Reg. 358. The York Region and Durham Region Health Units should be consulted regarding septic system decommissioning.
7. On page 192, 2nd paragraph, it should be noted that monitoring is needed for *both* quality and quantity. Mitigation measures should be noted in the EA for water supplies impacted by the undertaking. In the 3rd paragraph, the absence of houses with wells for water supply is not sufficient reason for not having concerns about ground water. These

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areas could be ground water recharge areas, which require protection to prevent adverse effects on ground water supplies and its users at other locations. In the 4th paragraph, it should be noted that even though some wells and a trailer park were located on soils with low hydrogeological sensitivity, the water-bearing formation which supports those wells could be adversely impacted by construction operations if excavation were to cut into the water bearing zone.

8. On page 202, Section 5.4.4.1, the EA should include mitigation of impacts of dust (during construction) on tender fruits and vegetables, if these products are grown in proximity to the roadway, and salt spray from road de-icing on lands used for crops.
9. On page 205, Section 5.5, the "Process for Addressing New Concerns" is problematic. This Section indicates that technical studies will be completed after the formal EA approval, this Ministry recommends that the technical studies be done prior to formal EA submission. Ministry staff cannot ensure that the MOE's areas of interest have been addressed effectively in the formal EA submission, if the required technical studies have not been undertaken. The formal EA should not be submitted without the technical studies to substantiate the recommendation for the preferred route.

Further, it is unclear how MTO is to determine during the design and construction phase how it will assess what a "significant impact" is and how the impact will be addressed through the Class EA process.

10. In Exhibit 5.10 D, the Section on fisheries habitat provides a better indication of possible impacts, and possible mitigation measures. Combining this section with other sections on fisheries would result in a more effective EA, and possibly less likelihood for unnecessary criticism of the EA. Other individual factors which have been reviewed in sections in various parts of the EA should also be combined into complete sections.
11. If staging of highway construction is to be used, the EA technical work should be completed for the *entire facility* during this environmental assessment for the sake of efficiency, and so that costly retrofits are not required at a later date. Storm water management facilities should be designed, and where necessary, constructed for the full four lane highway.

Thank you for the opportunity to participate in the review of the draft EA. Please feel free to call Maria Alles-DeVos at (416) 514-7113, if you have any questions.

Ann Weizmann for

Jim Clifford
Manager, Environmental Planning
Environmental Planning and Analysis Branch

cc: Nigel Wood, Environmental Assessment Branch, MOE
R. Ryan, Central Region, MOE
Anne Edwards, Central Region, MOE
M. Gordon, Ecosystem Science Section, MOE
R. Krawczyniuk, Approvals Branch, MOE

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Cultural Programs Branch
Archaeology and Heritage Planning Unit
Tel:(416)314-7146 Fax:(416)314-7175

31 October 1997

Steve Jacobs
Senior Project Manager
Planning Office, Central Region
Ministry of Transportation
3rd Floor, Atrium Tower
Downsview ON M3M 1J8



Dear Mr. Jacobs:

RE: Highway 404 Extension – Davis Drive to Highway 12, Route Planning Study and Environmental Assessment, Pre-Submission Environmental Assessment Report

Thank you for providing this Ministry with the opportunity to comment on this document. We are satisfied that the Environmental Assessment study took sufficient steps to consider impacts to cultural heritage features in the consideration of route alternatives. We are further satisfied that the proposed assessment and mitigation process will satisfactorily address the conservation of cultural heritage features where those features are to be impacted by the construction of the highway.

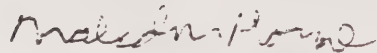
We wish to emphasise that all activities resulting in soil disturbance may impact archaeological resources and may have negative effects on other cultural heritage features. There may not only be impacts within the proposed ROW, but also impacts arising from activities involving associated features such as stormwater management facilities, service stations, temporary construction easements, mitigation/compensation measures, access roads, staging and storage areas, and others. All these activities should be assessed for their impacts to cultural heritage features, and, where necessary, those impacts should be mitigated.

It is noted that the Environmental Assessment generated information concerning cultural heritage features within the study area. Appendix 4 and Appendix 5 are discussed in the draft Environmental Study Report as detailing this information. Exhibit 4.18o mentions an unregistered Iroquoian village and several references are made to seven unregistered archaeological sites within the study area. We would appreciate receiving both appendixes and having MTO ensure that the seven archaeological sites are registered with the MCZCR Provincial Archaeological Sites Database.

We look forward to the opportunity to further comment on matters related to the conservation of cultural heritage features to be impacted by this project, and we would appreciate being kept informed as this project progresses. Technical assistance and advice in the conservation of cultural heritage resources is available at all time from this Ministry.

Should you wish to discuss this matter further, please do not hesitate to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "Malcolm Horne". The signature is fluid and cursive, written in a professional style.

Malcolm Horne
Heritage Planner



Ontario

Ministry of Ministère des
Natural Richesses
Resources naturelles

50 Bloomington Road West
Aurora, Ontario
L4G 3G8

Our Ref : 8538.8.521

December 5, 1997

Ministry of Transportation
Planning Office, Central Region
3rd Floor, Atrium Tower
1201 Wilson Ave
Downsview, Ontario
M3M 1J8

Attention: Mr. Steven Jacobs
 Sr. Project Manager

Subject: Highway 404 Extension, Route Planning Study and
 Environmental Assessment **Draft**
 W.P. 299-86-00

Staff at the Aurora District Office of the Ministry of Natural Resources (MNR), have reviewed the preferred alignment as supported by the above noted document and offer the following comments.

Overall the MNR recognises the efforts put into route design to date, where direct negative impacts to many large natural heritage areas and features have been avoided. We have reviewed, in detail, the route refinements and supporting rationale for changes presented at the March 18 1997 meeting with MTO staff. However, in a few critical locations the preferred route continues to present a significant impact to natural heritage areas and features. In many of these cases, there appears to be opportunities to move the alignment of the road slightly to avoid these significant conflicts. The MNR has documented below each one of these remaining cases, and would appreciate being advised as to whether or not the road will be realigned or further consideration given, as suggested in these comments.

Page 2

As previously stated, many of the natural heritage features and areas at risk are identified and protected through the land use planning process. Staff of the MNR have worked with municipalities and local communities to ensure protection of these sensitive areas through a variety of municipal planning initiatives. Where appropriate we present the relevant municipal planning documents which support the protection (and enhancement) of the natural heritage feature and its associated functions.

Acronyms used for municipal studies identifying natural features protected under the Planning Act:

- York Region Regional Greenlands System = YRRGS
- East Gwillimbury Natural Heritage System = EGNHS
- Queensville Natural Heritage System = QNHS
- Georgina Natural Features and Greenlands System = GNFGS

The following items outline the locations and issues relating to our outstanding areas of concern:

1. East Gwillimbury, Conc. 3, Lots 13-14 (Board 1):

The road bisects a woodland which also contains an unevaluated wetland. This area is part of the headwaters of Harrison Creek which is part of the Black River system.

This is a "core" natural heritage feature in the QNHS, and in the EGNHS. It is also part of the YRRGS.

RECOMMENDATION: Move the road east of the feature, also providing a suitable wildlife corridor design for linkage to the Black River system.

2. Georgina, Conc. 4, lots 1-2 (Board 2&3):

The road cuts into the western edge of the Maskinonge River Wetland, and into the adjacent uplands which are also important to maintain wetland function. This feature is part of the YRRGS, and part of the GNFGS. The alignment through this area appears to have been further refined with a resulting increased negative impact to the natural heritage features in question

...3

Page 3

RECOMMENDATION: The road should be moved to avoid the edge of the feature and adjacent uplands. There appears to be room to move the road west. Geometry constraints associated with local access ramps should be further evaluated.

3. Georgina, Conc. 6, Lots 13-15 (Board 3-4):

The road cuts longitudinally through the Sod Swamp, an evaluated wetland. This wetland and woodland feature are part of the YRRGS, and GNFGS. The agricultural conflict is represented by the protection of a specialty crop (orchard) in a localised area. Approximately 65% of all wetlands across the Greater Toronto Area have been lost. In Southern Ontario wetlands have been a functional feature on the landscape for 12,000 years since the last glaciation. The MNR has concerns associated with the weighting and evaluation which results in the protection of a feature which in terms of geologic time frames, landscape functions and landuse planning is a relatively 'intermittent' feature with a life span measured in 10's of years, at the expense of the wetland.

RECOMMENDATION: The road must be moved north and west out of the wetland feature and its supporting adjacent lands.

4. Vachelle Swamp, Georgina, Conc. 6, Lots 4-12 (Board 4-5):

Although there have been some recent revisions to the alignment associated with this natural heritage feature a significant conflict remains. This portion of the road still cuts through a substantial area of the Vachelle Swamp and woodland area. This is a **highly significant** feature because of its size and connection to the Black, Zephyr-Egypt, and Pefferlaw wetland and woodland systems. The preferred route constitutes a serious landscape fragmentation impact.

The Vachelle Swamp and associated woodlands are part of the YRRGS, and GNFGS. Because of its size, shape, composition, and connectivity, this unit is also an obvious example of a land unit that would be classified as "Significant Wildlife Habitat", and "Significant Woodlands", under the Planning Policy Statement.

RECOMMENDATION: The road should be moved north out of the feature.

...4

5. Georgina, Conc. 6, Lots 17-20 (Board 5):

The road cuts through a forested area and across a wetland tributary that is part of the Provincially Significant Morning Glory Swamp. The feature also provides a forested and wetland corridor linkage between the Lake Simcoe shoreline, Morning Glory Swamp, and the large and Provincially Significant Zephyr-Egypt Wetland Complex to the south, and Provincially Significant Lower Pefferlaw Brook Wetland and associated woodlands to the east. This linkage area is highly significant, and would be an obvious example of an area to be classified as "Significant Wildlife Habitat" under the Planning Policy Statement. The feature is recognised as part of the YRRGS and GNFGS.

The road crosses and runs along the edge of the woodland feature that is just east and contiguous with the Morning Glory Swamp wetland inflow. This woodland feature is part of the significant wildlife habitat corridor. The principles for designing the highway for terrestrial linkage functions are the same as for wetlands. The local topography and the landscape features must be evaluated to select the logical places to install wildlife movement corridors. Wildlife underpass structures are likely to be one of most important techniques used.

The MNR requires that a major wildlife corridor crossing and deterrents to crossing, (with accompanying rationale), be identified in this phase of the EA, prior to the detailed design phase. We recognise the inclusion of a 4x2 meter culvert in this area x 100 meters. While this is acceptable for small mammals, this type of structure does not allow for the passage of deer. The road grade may also need to be gradually raised over several hundred metres to achieve a minimum 2-3 metre height for additional table-land wildlife underpass. A span structure will need to be installed across the watercourse. Alternately, where grading up is not desirable, excavation of underpasses could be evaluated, combined with installing a span structure.

RECOMMENDATION:

Across this area the MNR will require the identification of a span crossing and additional wildlife underpasses that maximise the wildlife corridor functions of this wetland and woodland valley system. There is potential for enormous road kill of mammals, reptiles, amphibians, and birds. Maximising corridor functions here would likely involve a long span structure, with sufficient underpass height to allow movement of large mammals such as deer. These structures must be identified at this stage of the EA.

Page 5

6. Brock, merging with Hwy. 48 (Board 6):

The road merges with the existing Hwy. 48, which runs through the Port Bolster Wetland, the Provincially Significant Gibson Hill Wetland, and large forested areas.

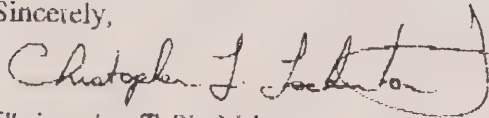
In keeping with the design principles for crossing through wetland, forest and wildlife habitat areas, a critical design feature along this stretch must provide for numerous strategically placed wildlife corridor linkages. There are several kilometres of highway parallel to these large wetland and forested areas. Numerous underpasses in strategically important areas should be planned for. If concrete median barriers are to be used along this highway, then many more wildlife underpass structures will need to be built. In addition to preventing unacceptably high wildlife mortality along un-crossable median barriers, the wildlife underpasses may minimise vehicle-deer collisions, thus saving human lives, and preventing serious injuries. Although data is lacking, it is the opinion of MNR that Gibson Hill Wetland contains a significant amount of winter concentration habitat for deer.

RECOMMENDATION:

The Study Report should highlight the need through this particular area for further analysis of wildlife crossings and recognise the need for associated mitigating structures. For the most part greatly oversized culverts coupled with grading and vegetation management, if incorporated into the design will ensure that small mammal migration can take place and will improve the current situation. We are satisfied that the concerns raised by MNR through this area can be addressed through the detailed design stage. We look forward to working with MTO staff in this regard at the detailed design stage.

This concludes the MNR's comments on the *Draft Route Planning Study and Environmental Assessment*. We hope that our remaining significant conflicts can be resolved, and that our detailed information will assist with the project. Once these issues have been addressed we look forward to participating in the remainder of the Environmental Assessment process. If you have any questions on the technical aspects of this letter, please contact Ian Buchanan (905 713-7405) or Chris Tschirhart (905 713 7366).

Sincerely,



Christopher T. Tschirhart
Senior Resource Planner
Aurora District

IB/CT

November 5, 1997

Mr. Steve Jacobs, P. Eng.
Senior Project Engineer
Planning Office – Central Region
Ministry of Transportation
3rd Floor, Atrium Tower
Downsview, Ontario
M3M 1J8

Dear Mr. Jacobs:

Re: Highway 400-404 Extension Link (Bradford Bypass)
Route Location and Environmental Assessment Study
Pre-Submission Environmental Assessment Report

Highway 404 Extension – Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report

Thank you for your letters regarding the above-noted studies. My staff for York Region and the County of Simcoe have reviewed the project and we wish to advise that this Division has no comment at this time.

In addition, this Ministry will provide comments on the impact of the proposal to heritage resources. For review/comment on potential impact to heritage resources, please contact the Manager of the Archaeology and Heritage Planning Unit at: 77 Bloor Street, 2nd Floor, Toronto ON M7A 2R9.

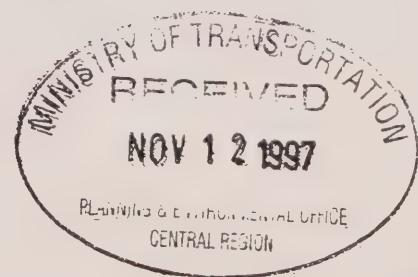
Thank you for the opportunity to provide input to this undertaking.

Sincerely,



Nina Chahal
Area Manager, Regional Services
Central/West Region

cc: Manager
Archaeology and Heritage Planning Unit
2nd Floor - 77 Bloor Street West Toronto ON M7A 2R9



Ministry of
Agriculture, Food
and Rural Affairs

R.R. #3, 95 Dundas St.,
Brighton, Ontario K0K 1H0
Tel: (613) 475-1630
(800) 262-2885
Fax: (613) 475-3835

Ministère de
l'Agriculture, de l'Alimentation
et des Affaires rurales

R.R. #3, 95 rue Dundas
Brighton, Ontario K0K 1H0
Tél.: (613) 475-1630
(800) 262-2885
Télec.: (613) 475-3835

Agriculture & Rural Division

December 1, 1997

Steve Jacobs
Senior Project Manager
Planning Office, Central Region
Downsview, Ontario
M3M 1J8

Dear Mr. Jacobs:

Subject: Highway 404 Extension from Davis Road to Highway 12
Route Planning Study & Environmental Assessment Study
Pre-Submission Environmental Assessment Report
York & Durham Region

Staff of this Ministry have completed a review of the above-noted report. Consideration has been given to the matter in terms of the goals, objectives, policies and programmes of this Ministry.

As outlined within "Main Report" (page 16), the proposed undertaking consists of approximately 45 kilometres of new four lane divided highway with controlled access extending northerly from Davis Drive to Durham Road 23 and a 9.0 kilometre transition section between Durham Road 23 and Highway 12.

Section 4.74 Durham Road 23 to Highway 12, page 150 & 151

As indicated on Exhibits 4.28B & 4.28C the twinning of Highway 48 was the "preferred alternative" because twinning Highway 48 would provide acceptable traffic operations at lower costs. It is this Ministry's understanding that no service roads are planned to be established along this "transition section" of Highway 48.



We have also noted within the "Main Report" that in light of residents (farm & non-farm) unresolved concerns along this stretch of Highway 48 the Ministry of Transportation is "committing to reassess the current and projected traffic prior to construction of this portion of the Highway 404 Extension to ensure that the recommended plan is still appropriate".

Based on this review, this Ministry has no further comments with the above noted EA report.

Should you have any questions or wish to discuss this matter further, please contact this office.

Yours truly,



Ray Valaitis
Rural Planner

copy: Donna Mundie, Environmental Policy Adviser, OMAFRA

(Ea404.rcv)

Highway 404 Environmental Assessment Report Reply Form

Please Return to:

Steve Jacobs
Senior Project Manager
Planning Office, Central Region
Ministry of Transportation
3rd Floor, Atrium Tower
Downsview, Ontario M3M 1J8
Phone: (416) 235-5522

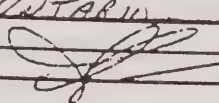
Fax: (416) 235-4940

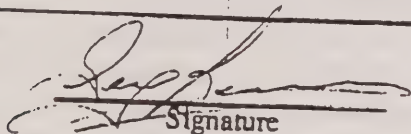
From:

Ms. Guy Rivchin
~~Mr. Keith Grady~~
Canadian Environmental Assessment Agency
13th Floor Fontaine Bldg.
200 Sacre-Coeur Blvd.
Hull, Quebec
K1A 0H3

I acknowledge receipt of the Draft Environmental Assessment Report (EAR) for the Highway 404 Extension - Davis Drive to Highway 12, W.P. 299-86-00

Please print name and title if different from above:

KEITH GRADY IS AWAY ON EDUCATIONAL LEAVE AND
I AM NOW THE DIRECTOR FOR ONTARIO



Signature

12/22/97
Date

Please return this form immediately by Fax/Mail



Lake Simcoe Region Conservation Authority

120 Bayview Parkway, Newmarket, Ont. L3Y 4X1
Telephone: (905) 895-1281 Fax: (905) 853-5881

VIA FACSIMILE ONLY

November 27, 1997

Mr. Steve Jacobs, P.Eng.
Senior Project Manager
Planning Office, Central Region
Ministry of Transportation
Third Floor, Atrium Building
Downsview, Ontario
M3M 1J8

Dear Sir:

Re: **Highway 404 Extension, Davis Drive to Hwy. 12**
Highway 400-404 Extension Link
Environmental Assessment Reports

We have reviewed the above noted reports and have the following comments:

Davis Drive to Highway 12

The section of road between Queensville and Keswick will run very close to the Maskinonge River in several locations. Although floodlines have not been determined for most of this river, it is likely that portions of the road will be in the Regulatory floodplain. It is important that upstream and downstream flood levels and watercourse erosion not be impacted by the proposed road construction in this area. We are also concerned about any loss of wetland or forested areas in the Maskinonge River basin. Preliminary findings of a study we are conducting on behalf of the Town of Georgina indicate that there are very little forested and other natural areas left in the Maskinonge watershed and as such, the remaining pockets of these features are very important to the health of the river.

Highway 400-404 Link

The ESA limit indicated on Exhibit 4-3 is for the physical ESA known as the Holland Marsh Lowlands (C1) and is shown as a grey shaded area in our ESA study. The biological ESA known as the Holland Marsh (A16b) is larger than area C1 and is identified as a solid green line in our study. I have attached copies of the relevant pages from the ESA study for your reference.

... /2

Lake Simcoe Region Conservation Authority

Page 2 of 2

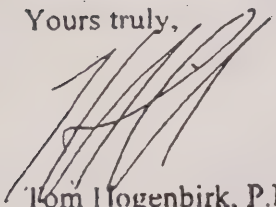
Mr. Steve Jacobs

Environmental Assessment Reports

November 27, 1997

Should you have any questions regarding the above, please do not hesitate to contact the undersigned.

Yours truly,



Tom Hogenbirk, P.Eng.,
Conservation Engineer.

TH/mz

Encl.

Your Land • Your Water • Your Future

LAKE SIMCOE

A16
Holland
Marsh

A16a

A16b

A17a

Limit of
A16b

A17b

Landing

C1 Holland
Marsh
Lowlands
(Grey area)

SOUTH LAKE SIMCOE
CONSERVATION AUTHORITY

ENVIRONMENTALLY SIGNIFICANT AREAS



Environment Canada

October 27, 1997

Mr. Tom Farrell
Supervisor - Strategic Planning
Ministry of Natural Resources
Greater Toronto Area District
50 Bloomington Road West
Aurora, Ontario
L4G 3G8

Dear Mr. Farrell:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review are three copies of the pre-submission Environmental Assessment Report (EAR) and Appendices for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

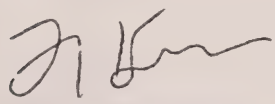
This report is being distributed to Ontario Government Ministries and Agencies for review and comment to ensure that any outstanding issues are resolved prior to finalization of the formal submission to the Ministry of Environment and Energy.

If you have any questions, comments or concerns on the EAR, please submit your response no later than November 28, 1997. In addition, please complete and return the attached "Reply by Fax/Mail" form to acknowledge receipt of the Draft Report.

Your comments are required by this date since this project must make a final submission to MOEE prior to the end of 1997 to be covered by the transition provision of the revised EA Act.

Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,


for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA
Mr. Larry Douglas - MNR

October 27, 1997

Mr. Peter Carruthers
Archaeology and Heritage Planning Unit
Cultural Operations Branch
Ministry of Citizenship, Culture & Recreation
77 Bloor St. West, 2nd Floor
Toronto, Ontario
M7A 2RA

Dear Mr. Carruthers:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) for the Highway 404 Extension Study and one separate copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

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Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Ms. Barbara Johnston
Environmental Assessment Branch
Ministry of Environment & Energy
250 Davisville Ave., 5th Floor
Toronto, Ontario
M4S 1H2

Dear Ms. Johnston:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) and Appendices for the Highway 404 Extension Study and one separate copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.


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Yours truly,


for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Philip Howell
Director
Economic Development Co-ordination and Analysis Br.
Ministry of Economic Development, Trade & Tourism
900 Bay St.
Toronto, Ont.
M7A 2E1

Dear Mr. Howell:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.


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Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,


for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Rick McLean
Supervisor, Navigable Waters Protection
Canadian Coast Guard
Central Region
201 North Front St., Suite 703
Sarnia, Ontario
N7T 8B1

Dear Mr. McLean:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

This report is being distributed to Ontario Government Ministries and Agencies for review and comment to ensure that any outstanding issues are resolved prior to finalization of the formal submission to the Ministry of Environment and Energy.

If you have any questions, comments or concerns on the EAR, please submit your response no later than November 28, 1997. In addition, please complete and return the attached "Reply by Fax/Mail" form to acknowledge receipt of the Draft Report.

Your comments are required by this date since this project must make a final submission to MOEE prior to the end of 1997 to be covered by the transition provision of the revised EA Act.

Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Jim Clifford
Manager
Ministry of the Environment and Energy
Environmental Planning & Analysis Branch
40 St. Clair Ave. West, 10th Fl.
Toronto, Ontario
M4V 1M2

Attention: Ms. Elizabeth Janz

Dear Ms. Janz:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review are four copies of the pre-submission Environmental Assessment Report (EAR) and Appendices for the Highway 404 Extension Study and one separate copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.


This report is being distributed to Ontario Government Ministers to ensure that any outstanding issues are resolved prior to submission to the Ministry of Environment and Energy.

If you have any questions, comments or concerns on the EAR prior to November 28, 1997. In addition, please complete and return the form to acknowledge receipt of the Draft Report.

Your comments are required by this date since this project is scheduled to be completed prior to the end of 1997 to be covered by the transition provisions of the Act.

Should you find that this Ministry can assist you in any way please contact me directly. Thank you for your assistance in this matter.

Yours truly,


for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

3 exec Summaries

EPA Branch

St Clair West

Grid

Mrs. M. Alice - Devoss

October 27, 1997

Mr. Michael Walters
Lake Simcoe Region Conservation Authority
120 Bayview Parkway
Box 282
Newmarket, Ont.
L3Y 4X1

Dear Mr. Walters:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) and Appendices for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

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Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Bill Aird
Rail Infrastructure Directorate
Canadian Transportation Agency
Ottawa, Ont.
K1A 0N9

Dear Mr. Aird:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

This report is being distributed to Ontario Government Ministries and Agencies for review and comment to ensure that any outstanding issues are resolved prior to finalization of the formal submission to the Ministry of Environment and Energy.

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Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Ms. Eve Wyatt
Manager, Corporate Planning
GO Transit
20 Bay St.
Suite #600
Toronto, Ont.
M5J 2W2

Dear Ms. Wyatt:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

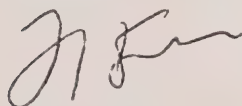
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Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for
Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Fred Podealuk
Ontario Hydro
A-5 F12
700 University Ave.
Toronto, Ont.
M5G 1X6

Dear Mr. Podealuk:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

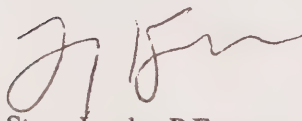
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Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for
Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Keith Grady
Canadian Environmental Assessment Agency
13th Floor Fontaine Bldg.
200 Sacre-Coeur Boulevard
Hull, Quebec
K1A 0H3

Dear Mr. Grady:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

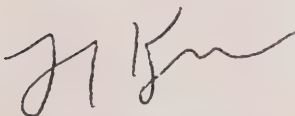
This report is being distributed to Ontario Government Ministries and Agencies for review and comment to ensure that any outstanding issues are resolved prior to finalization of the formal submission to the Ministry of Environment and Energy.

If you have any questions, comments or concerns on the EAR, please submit your response no later than November 28, 1997. In addition, please complete and return the attached "Reply by Fax/Mail" form to acknowledge receipt of the Draft Report.

Your comments are required by this date since this project must make a final submission to MOEE prior to the end of 1997 to be covered by the transition provision of the revised EA Act.

Should you find that this Ministry can assist you in any way in meeting this deadline, please contact me directly. Thank you for your assistance in this matter.

Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Mr. Serge Metikosh
Department of Fisheries and Oceans
867 Lakeshore Road
Box 5050
Burlington, Ontario
L7R 4A6

Dear Mr. Metikosh:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) and Appendices for the Highway 404 Extension Study. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.

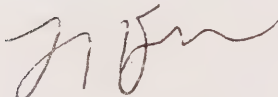
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Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Ms. Sharon Johnston
District Manager
Ministry of Agriculture, Food & Rural Affairs
Land Use Planning Branch
1 Stone Road West
Guelph, Ontario
N1G 4Y2

Dear Ms. Johnston:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

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Yours truly,



for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA

October 27, 1997

Ms. Patricia Boeckner
Director
Provincial Planning Services Branch
Ministry of Municipal Affairs and Housing
777 Bay Street, 14th Floor
Toronto, Ontario
M5G 2E5

Dear Ms. Boeckner:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

Enclosed for your review is one copy of the pre-submission Environmental Assessment Report (EAR) for the Highway 404 Extension Study and one separate copy of the Executive Summary. This study was initiated in 1993 and has gone through a lengthy consultation process, including five series of public consultation sessions. This study has been carried out as an Individual Environmental Assessment according to the requirements of the Environmental Assessment Act of Ontario.


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Yours truly,


for Steve Jacobs, P.Eng.
Senior Project Manager

Att.

cc: P. Reynolds - MTO
C. Ricketts - CSA



October 27, 1997

Mr. Charles Bouskill
Director
Corporate Policy Co-ordination
Ministry of Citizenship, Culture & Recreation
34 Simcoe St., Suite 302
Barrie, Ont.
L4N 6T4

Dear Mr. Bouskill:

**RE: Highway 404 Extension - Davis Drive to Highway 12
Route Planning Study and Environmental Assessment
Pre-submission Environmental Assessment Report**

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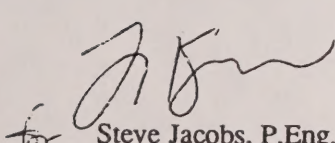
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Senior Project Manager

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